APPENDIX B

APPENDIX B

DEERS PROGRAM MANUAL

OPERATING INSTRUCTIONS FOR THE DEERS ELIGIBILITY INQUIRY TERMINALS

This appendix prescribes detailed operating instructions for the two CRT terminals being used by DEERS for eligibility checking in Uniformed Services facilities. These two types of terminals are the Racal-Milgo 4276 (page B-2) and the Courier 2700 (page B-17).

4276 Stand Alone Display Station Operator's

Racal-Milgo™

RACAL
The Electronics Group

0D31A4276/A8 1/81

WARNING:

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. As temporarily permitted by regulation it has not been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

TABLE OF CONTENTS

INTRODUCTION 1
DISPLAY 1
DISPLAY STATION SCREEN 2
OPERATOR INFORMATION LINE 2
KEYBOARDS 3
SPECIAL KEYS 3
CHARACTER GENERATING KEYS 8
CURSOR POSITIONING KEYS 9

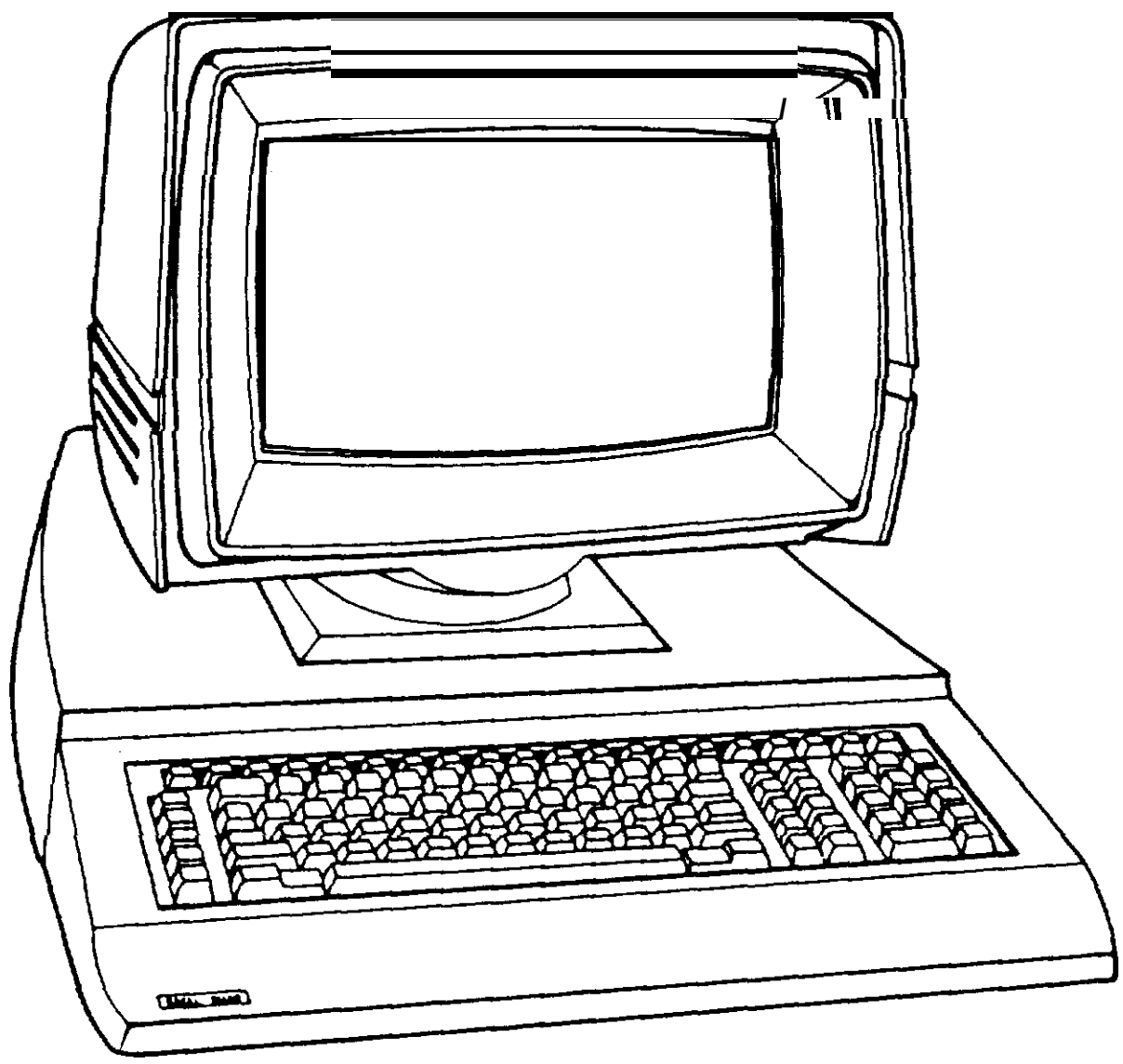
INTRODUCTION

This book introduces you to a new stand alone communications terminal, the Racal-Milgo 4276. The text and illustrations have been organized so that you can become a competent terminal operator in the shortest time possible. This operator's guide has been specially written to make your learning experience as easy and informative as it can be.

Don't be frightened if this is your first encounter with a communications terminal. You will quickly see that the terminal is composed of elements that are not significantly different from some very familiar items, such as an ordinary typewriter and a television screen. You will soon find your encounter to be an encounter of the most rewarding kind.

DISPLAY

The CRT display is actually a moveable window which allows the operator a comfortable viewing angle. A conveniently located brightness control compensates for variable room lighting conditions. The screen is capable of displaying 25 horizontal lines of 80 characters each. The 25th line always displays operator information and cannot be used for DATA ENTRY The remaining 24 lines makeup one page of data stored in display memory Thirty seconds after the power is applied, the cursor, a solid rectangle, will appear at the upper left-hand corner of the display screen. The cursor is manually controlled from the keyboard and indicates where the next keyboard character entry will be made. Whenever the term bottom or final line is used, it refers to the last possible data line, the 24th line of text.



COD31A4O1OA22

DISPLAY STATION SCREEN

The station screen displays both control information generated by an application program and data entered by the operator from the station keyboard. The control information includes prompts defined by the application program to guide the operator in selecting operations or in keying data in the proper order and format.

The display screen is capable of displaying 1,920 characters, formatted as 24 lines of 80 characters each.

In each screen format the last line (line 25) is used as an operator information line. The operator information line is used to display physical and operational status information plus any error messages or informational messages related to the current station activity (English language messages are used rather than special symbols). The operator information line is also used to enter local commands and to perform the off line functions identified in the local command section.

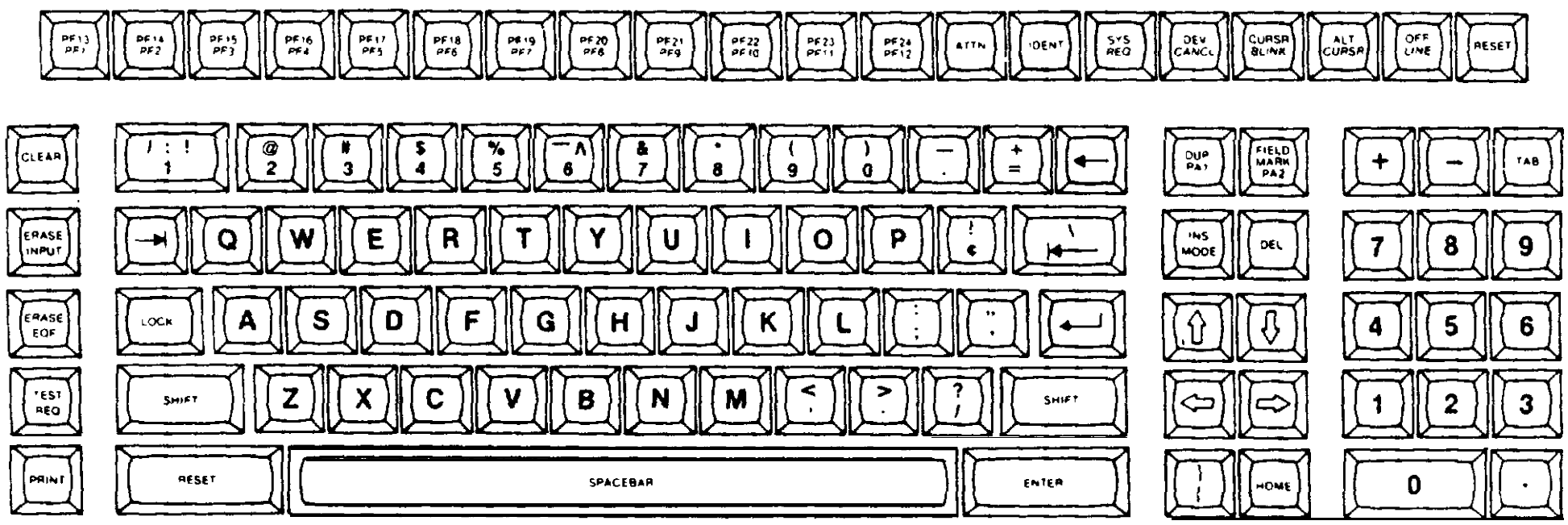
OPERATOR INFORMATION LINE

The operator is kept informed of the status of the terminal by the Operator Information Line, Line 25 of the display. The, line is divided into the informational fields shown below.

- Columns 1-9 – Operating Mode (Remote, On-Line or Local)
- Columns 10-14 – Case – Shift (Upper or Lower, Shifted or Not)
- Columns 15-19 — Insert Mode
- Columns 20-36 — Printer Status
- Columns 37-57 — Keyboard Status
- Columns 58-70 — Communication Error Messages
- Columns 71-80 — Counters
  - 71-74 – Line Count
  - 75-80 – Column Count

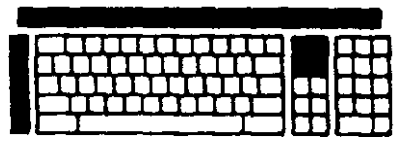
KEYBOARDS

A number of keyboard styles are available as part of the RMI 4276 Stand Alone System. Pictured below is the 87-key TYPEWRITER EBCDIC keyboard which is compatible with the IBM 3278.

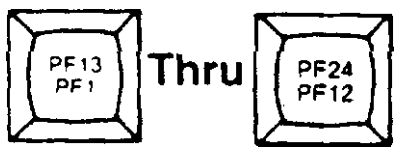


COD31A4276A22

SPECIAL KEYS



PF 1 'THROUGH PF 24 KEYS



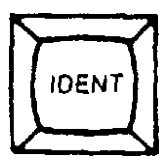
The PF keys are program function keys that are assigned specific functions by the application program operating at the host. On the 4227 keyboard, there are 24 PF keys. PF 1 through PF 12 are function keys located in the top row of the keyboard. PF 13 through PF 24 are the shifted functions of the same keys.

ATTN (Attention) KEY

ATTN

Depressing this key causes the screen to switch between five different displays. Initially the screen displays the Current Message Traffic. The First key strike causes the screen to display the Format Buffer. The Second key strike presents the Printer Buffer. The Third presents the Receive Buffer, the Fourth the Transmit Buffer. The Fifth key strike brings back the Current Message Traffic.

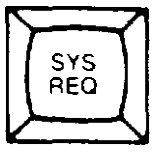
IDENT (Identification) KEY



CO031A4276A23

This key is not used.

SYS REQ (System Request) KEY

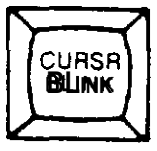


When the SYS REQ key is depressed, a signal is sent to the host system to indicate to the application program that your display station may be failing and that you are requesting a station test. The request for test procedures is normally defined in the application program user's guide. If not, ask your supervisor for assistance.

DEV CANCL (Device Cancel) KEY

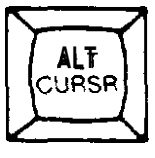
The DEV CANCL key is used to cancel a print request (see Print key description) when the printer is busy, not working, or fails during a print operation. The device cancel function is activated by depressing DEV CANCL key.

CURSR (Cursor) BLINK KEY



This key is not used.

ALT CURSR (Alternate Cursor) KEY



This key is used to enter the Line Monitor Mode. It is used primarily by Field Support personnel.

To Enter the Line Monitor Mode:

- **Be sure the LOCK key is off (i. e., in the up position).**
- **Depress the ALT CURSR key.**
- **. Depress the ATTN key while holding down the SHIFT key. The Line Monitor will now be displayed.**

To Freeze the Line Monitor:

- **. Depress the SHIFT key and the ATTN key simultaneously.**

To Resume Line Monitor Operation:

- **. Depress the SHIFT key and the ATTN key simultaneously.**

To Remove the Line Monitor:

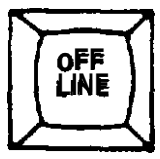
. Depress the ALT CURSR key while holding down the SHIFT key.

- **Depressing SHIFT-ALT CURSR will restore the Line Monitor.**

To Exit the Line Monitor Mode:

- **Depress the ALT CURSR key or the RESET key.**

OFF LINE KEY



This key is used to enter Local Mode in order to use the various Local Commands and is used primarily by Field Support Personnel.

The three Local Commands available with the 4276 Stand Alone System are:

- **CFG – displays the terminal parameters (such as station address, baud rate,** etc).
- **OPT – displays the system options that are available.**
- CKM – displays **the system checksum.**

To Enter Local Mode:

. Depress the OFF LINE key.

- **Type the specific Local Command** (CFG, **OPT, CKM), being sure they are entered in upper case.**

. Depress the ENTER key.

- **Use the TAB key or any Cursor Positioning key to position the cursor.**

To Exit Local Mode with changes recorded:

. Depress the PF 1 key.

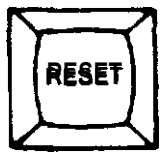
To Exit Local Mode without recording changes:

. Depress the PA 1 key.

To Exit **the Local Command displays:**

- **Depress the RESET key.**

RESET KEY



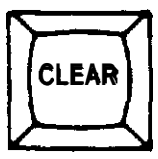
The RESET key is used to:

- **restore keyboard operation when most error messages or messages that inhibit the keyboard are displayed,**

- **terminate an Insert Mode operation**

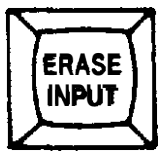
The RESET key does not function when transmitting data to or receiving data from the host system, or when any messages relating to a print operation (see PRINT key) are displayed. The DEV CANCL key is used to clear print operation messages.

CLEAR KEY



Depressing the CLEAR key: (1) erases every character on the screen (protected and unprotected fields) except the operator information line; (2) moves the cursor to the first character position of line 1: (3) places the display in an unformatted mode; (4) sends a message to the application program indicating that a clear function has occurred; and (5) displays the INHIBIT-WAITING message on the operator information line.

ERASE INPUT KEY



Depressing the ERASE INPUT key while working with a formatted screen containing entry fields, clears all characters in the entry fields and moves the cursor to the first character position of the first entry field on the screen.

Depressing the ERASE INPUT key while working with a formatted screen that has no entry fields only moves the cursor to the first character position in line 1 of the screen. No data characters are erased.

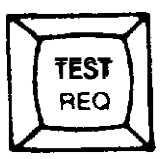
Depressing the ERASE INPUT key with an unformatted screen erases the entire screen and moves the cursor to character position 1 of screen line 1.

ERASE EOF (End of Field) KEY

The ERASE EOF key erases or clears character positions in only the entry field in which the cursor is located. All characters in the entry field from the current cursor location to the end of the field are erased. The cursor does not move, but remains in the current location during the erase operation.

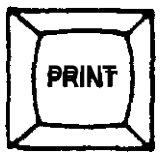
If your screen is unformatted, all character positions from the current cursor location to the end of the screen are cleared. This occurs because an unformatted screen appears as one large field to the system.

TEST REQUEST KEY



This key is not used.

PRINT KEY

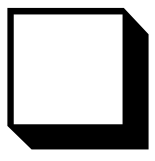


Depressing the PRINT key causes the data on your screen to be printed on the printer. A message in the form'' PRINTER =01" is displayed in the printer status portion of the operator information line.

If the printer is busy the message BUSY=01 is displayed, indicating that the printer is busy. In a busy situation, you can either wait until the printer becomes available (ACTIVE=01 displayed) or you can terminate the print request by depressing the DEV CANCL key.

If the printer fails during your print operation, the DEV ERR message is displayed on the operator information line. You must terminate the print operation by depressing the DEV CANCL key. If the failure resulted in printer power loss, you must restart the printer operation, since the characters not printed before the failure may or may not have been lost. To ensure the integrity of the messages it is best to repeat the print request.

PA 1 AND PAZ KEYS



m

The PA 1 and PA 2 keys are program access (PA) keys that provide a method of communicating with application programs operating at the host system. The specific use of the PA 1 and PA 2 keys is defined by the application program at the host. Refer to the application program user's guide for details on when the keys are to be used and what functions they perform.

DUP (Duplicate) KEY

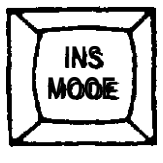
The DUP key is the shifted function of the PA1 key (i.e., depress the SHIFT key and the PA1 key). Depressing the DUP key causes a unique character code to be entered at t he current cursor location and causes a tab forward operation to occur. The duplicate function provides a fast method of entering information that is common from one formatted display (or document) to the next in the same application. The DUP key causes a special code to be sent to the host system to indicate that a duplicate function is needed. The special code is displayed as an asterisk (*) on the display screen and printer.

NOTE: Because the use of the DUP key is defined by the application program, you should refer to the application program user's guide for specific uses.

FIELD MARK KEY

The FIELD MARK key is the shifted function of the PA 2 key (i.e., depress the SHIFT key and the PA 2 key). The FIELD MARK key provides a method of indicating the end of a field when working with an unformatted display application. A semicolon (;) is displayed on the display screen when the FIELD MARK key is depressed.

INS (Insert) MODE KEY



Depressing the INS MODE key places the keyboard in the Insert Mode which allows you to insert a character or string of characters in the middle of a field without changing the characters already displayed in the field. The INS message is displayed in the operator information line when in the Insert Mode.

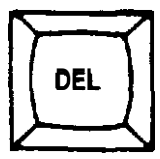
The number of characters that may be inserted in a field is limited to the number of null characters remaining at the end of field. For example, in a field of 30 characters, with 16 character positions occupied, 14 characters could be inserted if necessary.

When an alphanumeric key is depressed during the Insert Mode, the character is displayed at the current cursor location, while the cursor and all characters to the right of the cursor are shifted to the right 1 character location. When the last available character position in the field is occupied, the keyboard is disabled (INHIBIT-FIELD FULL message displayed).

If a field consists of more than 1 line, the character in the last position of the line containing the cursor is shifted to the first character position of the next line.

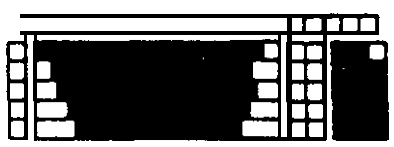
To return the keyboard to the Normal Mode, depress the RESET key. You may also use the ENTER key, or any other key that causes communication with the host system (e.g., PA, or PF keys).

DEL (Delete) KEY



Depressing the DEL key, deletes the character marked by the cursor and causes all characters to its right to be shifted one character position to the left. The cursor remains stationary and is positioned under the character being left shifted to allow additional character deletions.

CHARACTER GENERATING KEYS



ALPHABETIC KEYS

The keycaps for the Alphabetic keys illustrate uppercase (capital) letters. The uppercase letters are displayed when the shift (SHIFT) and lock (LOCK) keys are used with the character key. The lowercase letters are displayed when the shift and lock keys are not used. All alphabetic keys are repeat-action keys.

SPECIAL SYMBOLS AND PUNCTUATION MARKS KEYS

Special Symbols and Punctuation Marks are located on the top row of the Character Generating keys. All symbols and punctuation marks are repeat-action keys. If a symbol or punctuation mark is on the top half of the keycap, the SHIFT key is used with the character key to display it. If the symbol or punctuation mark is on the lower half of the keycap, no shift is required.

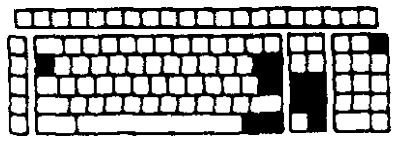
NUMERIC KEYS

The Numeric keys are repeat-action keys that display the digit on the lower half of the keycap when pressed. When the SHIFT key is used, the special characters on the upper half of the keycap are displayed. In order to assist the operator in entering a long series of numbers, a special numeric keypad has been included and is located to the right of the keyboard.

SPACE BAR

The Space Bar, located at the bottom center of the keyboard, is a repeat-action bar. When depressed, a space is entered on the screen replacing any other character currently in that character position, even a character in a nondisplay field. Spaces are valid data characters, so the Space Bar should never be used to position the cursor.

CURSOR POSITIONING KEYS



The keyboard provides Cursor Positioning keys to assist *you* in positioning the cursor. These keys are shown as shaded below.

Learning to use the Cursor Positioning keys is important because the cursor indicates the position in which the next character maybe entered. Knowing how to move the cursor to any location on the screen to key in new data or to correct previous keying errors will result in higher productivity when working with the system. These keys perform two basic operations:

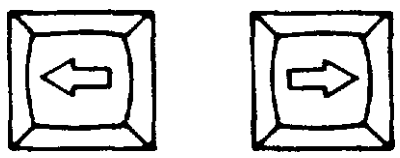
- **moving the cursor one character position each time the key is depressed, and**

- **moving the cursor from the current location to the first character position of the next screen line (unformatted screens) or to the first character position of the next unprotected field or entry field (formatted screens).**

MOVING THE **CURSOR ONE CHARACTER POSITION**

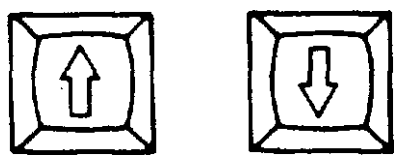
The keys provided to move the cursor one position include: the CURSOR LEFT (◀), CURSOR RIGHT (▶), CURSOR UP (▲), and CURSOR DOWN (▼).

CURSOR LEFT (◀) and CURSOR RIGHT (▶) KEYS



Depressing either of these keys moves the cursor one character position at a time in the direction indicated by the arrow. Each key is a repeat-action key and when held down will continue to move the cursor left or right until the key is released. These keys may also result in horizontal cursor wrap, when the cursor is moved off the left or right side of the screen. When the cursor moves off the right side of the screen, it reappears one line lower on the left side of the screen. If the cursor moves off the left side of the screen, it reappears one line higher on the right side of the screen.

CURSOR UP (▲) and CURSOR DOWN (▼) KEYS

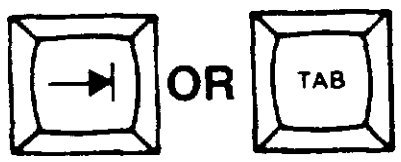


These keys move the cursor vertically up or down as indicated by the direction of the arrow. The cursor is moved one lineup or down on the screen remaining in the same character position in each line. Like the other cursor movement keys, the CURSOR UP and DOWN keys are also repeat-action keys. Vertical cursor wrap can occur if either key is held until the cursor moves off the top or bottom of the screen. The cursor reappears on the opposite edge of the screen (bottom or top) in the same relative character position it occupied when it left the screen. The bottom of the screen is the operator information line. In the Normal Mode the cursor cannot enter the operator information line.

MOVING THE CURSOR TO NEXT ENTRY FIELD

The TAB (→|), BACKTAB (|←), NEW LINE (←┘), and HOME keys may be used to move the cursor forward or backward from one entry field to another.

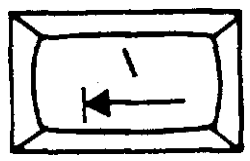
TAB KEY



The TAB key is a repeat-action key which permits you to move the cursor quickly from entry field to entry field. Depressing the TAB key, when working with a formatted screen, moves the cursor from the current location to the first character position of the next entry field.

Depressing the TAB key in an unformatted screen moves the cursor to the first character position in line 1 of the screen.

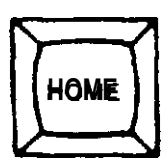
BACKTAB KEY



The BACKTAB key is also a repeat-action key which maybe used to reposition the cursor quickly from entry field to entry field.

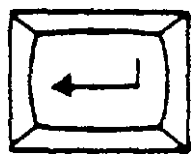
In a formatted screen, depressing the BACKTAB key moves the cursor to the first character position of the current entry field or to the first character position of the preceding entry field when the cursor is currently in position 1 of an entry field.

HOME KEY



Depressing the HOME key moves the cursor from the current location to the first character position of the first entry field (in formatted screens), or to the first character position of line 1 of the screen (in unformatted screens or screens with no entry fields).

NEW LINE KEY

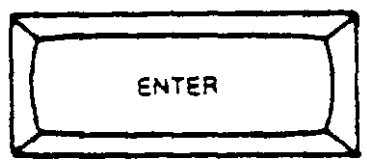


The NEW LINE Key is a repeat-action key which moves the cursor to the first character position of the first entry field in the next line of the screen.

In an unformatted screen, the NEW LINE key moves the cursor to the first character position of the next line. In a formatted screen, the placement of the cursor depends on the content of the next line.

Basically, the NEW LINE key attempts to place the cursor in the first unprotected character position of the next available line. If all character positions on the screen are protected, the cursor is placed in the first character position on line 1 of the screen.

ENTER KEY



Depressing the ENTER key informs the application program at the host system that you are ready to send the data displayed on your screen to the host. After the ENTER **key is depressed, your keyboard is disabled and the** INBIBIT-WAITING **message is turned on, preventing further data entry from the keyboard.**

When entering an Off Line command, the ENTER key is depressed to indicate the end of a response to a command prompt (e.g., after entering the command mnemonic, depress the ENTER key).

Racal-Milgo **welcomes your comments concerning this instruction book. Although every effort has been made to keep it free from errors, some do occasionally occur. When reporting a specific problem or error, please describe it briefly and include the instruction book part number, the paragraph or figure number, and the page number.**

Send your **comments** *to:*

RACAL-MILGO IN FORMATION SYSTEMS, INC.
ATTN: MR. FRANK MIELE
PUBLICATIONS PRODUCTION . MS 7104
8600 N.W. 41st Street
Miami, Florida 33166

Printed in U.S.A.

Customer Support

From time to time a problem may arise that seems to defy solution. On those occasions a full range of customer support services is available to assist in solving the problem.

Racal-Milgo offers:

- Telephone consultation for over the phone advice and trouble-shooting assistance from five regional support centers.
- Dialup testing to put your modem on line with the support center where trained, experienced field engineers using specialized test equipment can completely test the modem.
- Equipment spares stocked in 23 nationwide stocking centers for quick replacement of Racal-Milgo products.
- On-call field support to put a field service engineer on the scene with the knowledge, experience and test equipment to isolate difficult problems and get the system working.
- Installation and training to be sure your system is installed properly by on-site personnel familiar with modem operation, testing and problem isolation techniques.

Racal-Milgo™

Racal-Milgo Information Systems, Inc.
8600 N W 41st Street, Miami, Florida 33166
Telephone (305) 592.6600 TwX 8 10-S48.6588

RACAL
The Electronics Group

Customer Support Centers

Southeast Support Center

Racal-Milgo Information Systems, Inc.
3455 Desert Drive, Suite 102
Eastpoint, Georgia 30344
Phone: 404+ 763-0370 TWX: 810-751-3153

West Coast Support Center

Racal-Milgo Information Systems, Inc.
16632 Gemini Lane, Building K
Huntington Beach, California 92647
Phone: 714 + 847-4422 TWX: 910-596-2613

Southwest Support Center

Racal-Milgo Information Systems, Inc.
1301 North Piano Road, Suite 101
Richardson, Texas 75081
Phone: 214+ 238-0494 TWX: 910-867-4727

Midwest Support Center

Racal-Milgo Information Systems, Inc.
1325 Remington Road, Remington Office Court
Suite 1, Schaumburg, Illinois 60195
Phone: 312 + 882-8720 TWX: 910-651-0008

Northeast Support Center

Racal-Milgo Information Systems, Inc.
200 Craig Road
Freehold, New Jersey 07728
Phone: 201 + 780-4900 TWX: 710-722-3814

General Description - COURIER TERMINAL

FIGURE 1. MODEL 2700 DISPLAY TERMINAL

FEATURES

The 270 Information Display System is a family of general-purpose communication terminals and printers which provides the user with the ultimate in capability, flexibility, and reliability. Designed to be compatible with IBM display systems and computers, the 2700 Display Terminal offers features and advantages not offered by any other terminal. A terminal with detached keyboard is shown in Figure 1.

Three models of the display terminal are available:

Model 01 - 480-character display capacity (12 lines of 40 characters each)

Model 02 - 980-character display capacity (12 lines of 80 characters each)

Model 03- 1920-character display capacity (24 lines of 80 characters each)

These terminals can be used for entry of data into, or retrieval of data from, any of several IBM computers.

Standard features available on all three models include a non-glare video screen, the ability to establish a predetermined display format (called a formatted display), dual intensity characters, a blinking square cursor (if desired in place of the dash-type cursor), a variable field underline, and field blink. In addition, the choice of one of two standard keyboards is offered as a standard feature of each of the three terminal models.

optional features available for use with the 270 Information Display System include a light pen, a slot reader, lower-case alphabetic characters, a two-position locking switch (with key), an audible alarm to alert the operator of an entry error, a keyboard numeric lock, and a typewriter keyboard with a 10-key numeric pad. The operation of both the standard and optional features is described in sections in the manual dealing with keyboard operations.

FIGURE 2A. TYPEWRITER

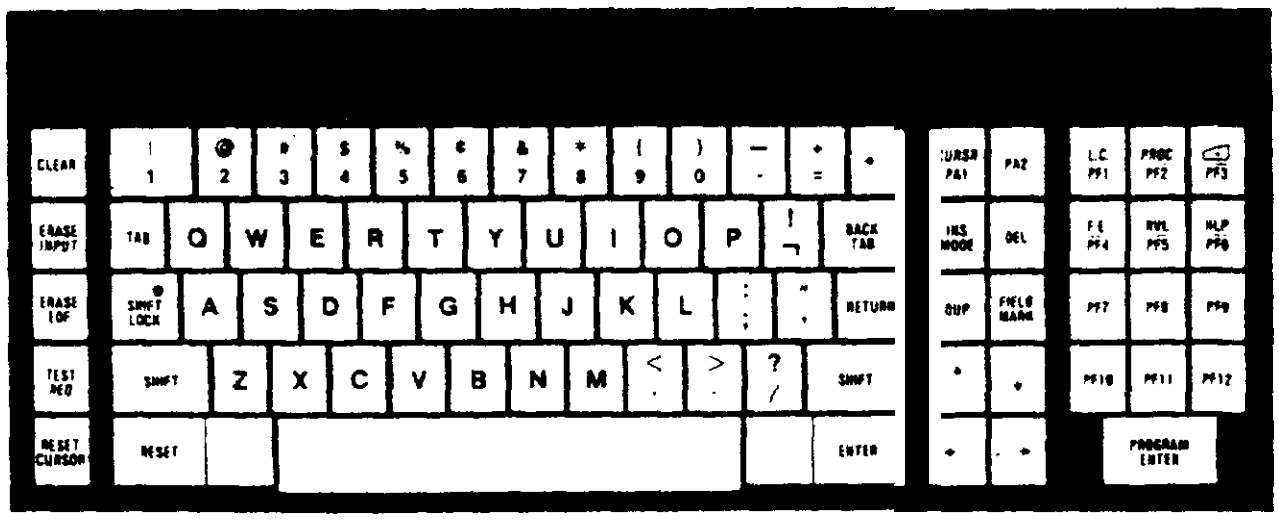


FIGURE 2B. DATA ENTRY

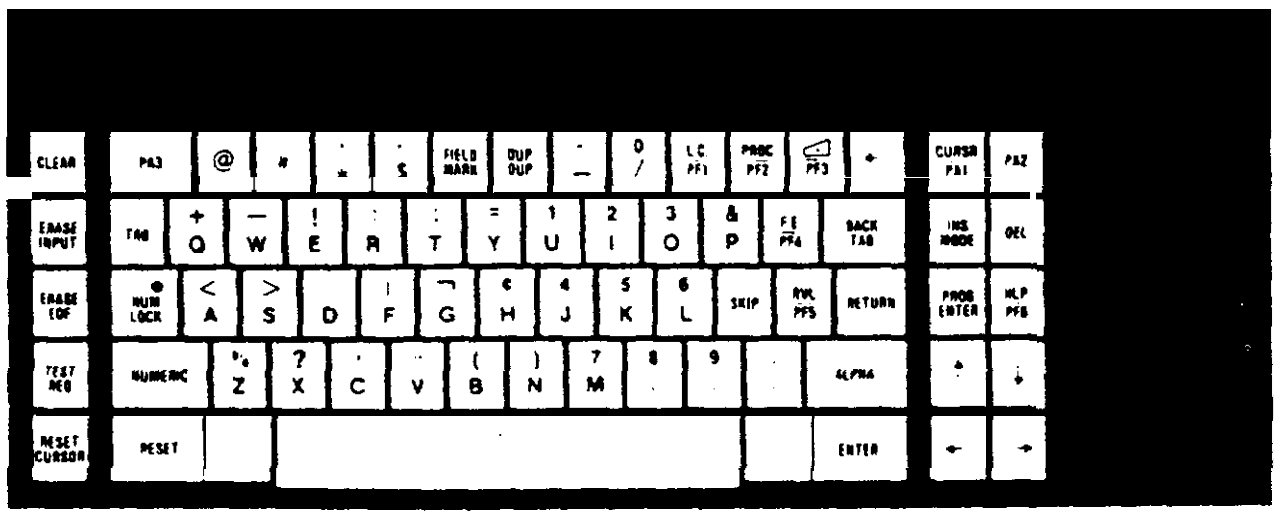
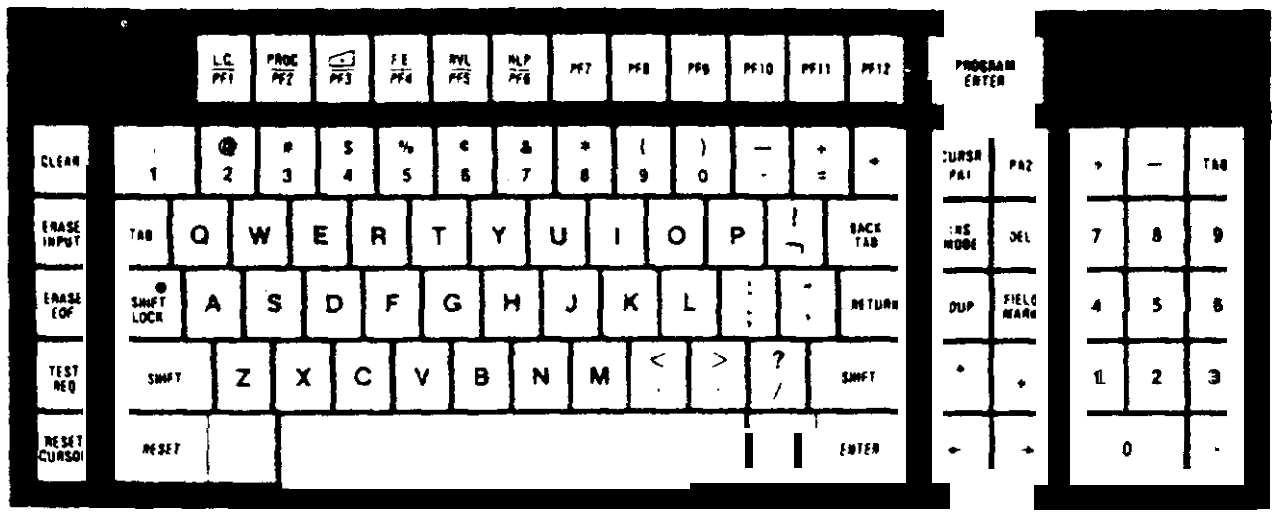


FIGURE 2C. TYPEWRITER WITH NUMERIC PAD



KEYBOARDS

There are three keyboard models any one of which may be used with the display terminal. These keyboards, shown in Figure 2, are briefly described as follows

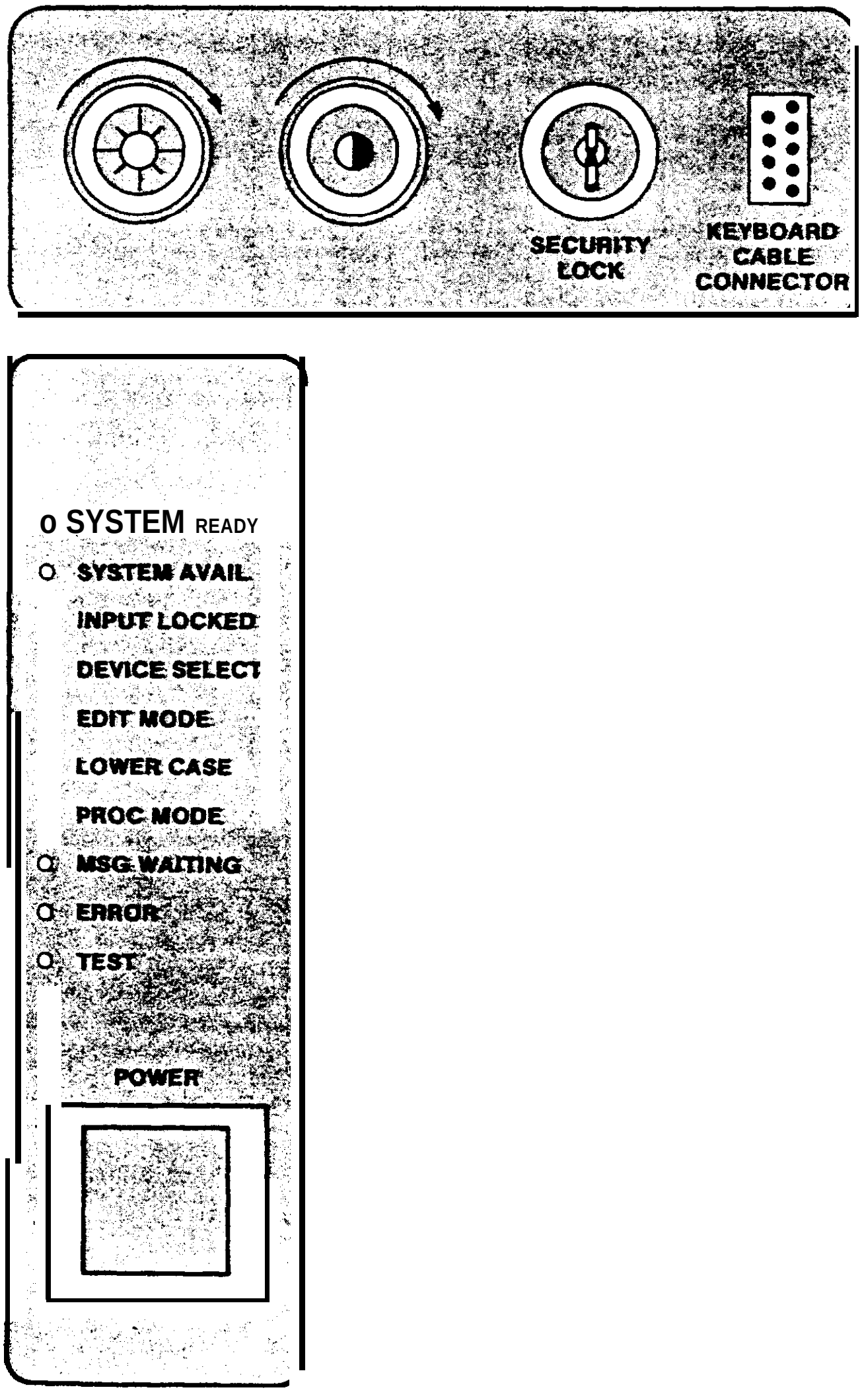
- **STANDARD TYPEWRITER KEYBOARD**
  The alphabetic and numeric keys of the typewriter keyboard are arranged just like a typical office electric typewriter. Symbols and punctuation are also arranged to be similar to a typewriter and are activated by shifting just as when operating a typewriter. This keyboard also has a 12-key pad, the keys (PF keys) of which are used to access computer application programs. The standard typewriter keyboard is shown in Figure 2a.

- **DATA ENTRY KEYBOARD**
  The alphabetic keys of the data entry keyboard are arranged like an office typewriter. However, the numeric keys are arranged in a keypunch-like layout just to the right of center on the keyboard (Figure 2b). When using this keyboard, numbers can be entered only when the keyboard is in the numeric or shifted mode. The punctuation marks and symbols are also arranged similar to a keypunch.

- **TYPEWRITER KEYBOARD WITH NUMERIC PAD**
  Offered as an option, this keyboard is essentially the same as the standard typewriter keyboard, but with two important differences. First, the PF keys used for program access are arranged in a row at the top of the keyboard. The second difference is that a 10-key numeric pad is located to the right of the keyboard. The numbers on this pad are arranged in a pattern similar to that found on calculators or adding machines used for accounting purposes. The typewriter keyboard with numeric pad is shown in Figure 2c.

NOTE: The PA 2 key may be designated ULINE PA 2 "

FIGURE 3. CONTROLS AND INDICATORS



One of the most important keyboard-related options is the lower-case option which provides the capability to display the 26 lower-case alphabetic characters *on* the terminal screen. With this optional feature installed, the L. C./PF1 key is" used to activate the lower-case typing mode on the keyboard. Once activated, the alphabetic keys generate upper- or lower-case characters depending upon the use of the SHIFT keys. Again, the operation is similar to that of a standard electric typewriter. The lower-case option may be used on the two typewriter keyboards. It is not applicable to the data entry keyboard.

Another optional feature available for use with any of the keyboards is the audible alarm. This option provides a small speaker which sounds a one-half second audible tone when a character is entered into the fast unprotected location on the screen. The alarm can also be activated by the computer with which the Model 2700 Display Terminal operates.

All of the keyboards have been designed with full regard to the people who will. operate them. The keyboards are detached from the display terminal, and the rear legs are adjustable by the operator so that a comfortable slant can be obtained. The keys activate a mechanical "clicker" when operated. This clicking sound provides an operational feedback to the person using the keyboard and is activated by the IPF3 key.

In addition, each keyboard has appropriate homing keys, i.e., keys which have a deeper "dish". These keys are the same as those used as home keys on any office typewriter. All of the keys have a matte finish to reduce glare.

In summary, the human engineering factors incorporated into the 270 information Display System provide optimum screen size and angle with allowances for appropriate character size, arrangement and clarity. The keyboard layout and functions< coupled with other functions such as protected format, tabbing, transaction keys, insert and delete and repeat characters, increase operator efficiency and reduce fatigue.

CONTROLS AND INDICATORS

Two control panels are incorporated in the Model 2700 Display Terminal; the layout of each is shown in Figure 3. The upright or vertical panel is located *to* the right of the display screen; the other panel is located underneath. A functional description of each control or indicator is explained in conjunction with the operating instructions for the individual keyboards.

OPERATING THE TERMINAL

The remainder of this instruction manual has been prepared so that each operating instruction is adjacent to an illustration of the key or group of keys being operated. The operator should sit at a terminal as the step-by-step instructions are read so the switches and keys maybe used at the same time. The sequence of operation begins when the POWER pushbutton is pressed, then proceeds from adjusting and observing the display image, through explaining the indicators, to understanding all of the keys on the keyboard. The operation of each keyboard is included in a separate section. Each section is complete in itself making it unnecessary to read data about a keyboard that is not installed on the terminal or to constantly refer to other sections of the manual.

CURSOR OPERATION

Full understanding of the cursor operation is essential to a complete understanding of the operation of the 270 Information Display System. Proper use of the cursor enhances operator efficiency. For this reason, the operator especially the new operator, should become familiar with the cursor operation even before proceeding with the remaining sections of this manual.

The cursor is a special symbol resembling an underscore or a blinking square which appears on the screen beneath the character position where the next character will be entered. It is not possible to begin entering data at a location other than where the cursor is located at that particular time. In addition, if it is desired to change, alter, or edit data that has been previously entered, the cursor is positioned beneath the data to be changed and then the appropriate action is initiated.

When power is first turned on, the cursor is automatically positioned at the first character location at the top of the screen. Normally, the cursor blinks on and off so that it is easily recognized, especially if the terminal screen has been filled with data.

On all keyboards, a cluster of four keys to the right of the main keyboard allows for movement of the cursor one' location at a time to the left (←), right (→), up (↑), or down (↓). In addition, the backspace key (in its normal position on the keyboard) serves the same function as the move-cursor-left key and is also marked with a left arrow (←). The TAB key and the BACK TAB keys also move the cursor; the TAB key moves the cursor to the right, and the BACK TAB key moves it to the left. In addition, the RETURN key positions the cursor to the first entry position on the next row; the RESET CURSOR key positions the cursor to the first entry position in the top row. Using these keys, the cursor may be positioned to sny location on the screen without disturbing the contents of the corresponding buffer locations.

The cursor positioning keys are all capable of causing the cursor to "wrap" (move off the top or bottom of the screen or move off either side and appear on the opposite side). Horizontal wrap causes the cursor to reposition to the first location of the next lower or higher row of characters. Vertical wrap causes the cursor to reposition to the top or bottom of the screen, but does not involve any horizontal movement. The cursor movement keys repeat at approximately 24 times per second for horizontal movement and approximately 12 times per second for vertical movement.

Detailed instructions about operating the cursor are contained in the sections of this manual pertaining to each keyboard.

OPERATOR ACTIVATED FEATURES

in addition to the normal operation of the terminal, the operator can activate several control functions from the keyboard. All functions are activated or deactivated by

(A) depressing and holding the left shift key,
(B) depressing and holding the left shift lock key, and
(C) depression of the required function key.

Repeated depressions of the function key will alternately activate/deactivate the function.

CURSOR STYLE CONTROL

The operator can select either a blinking block style or an underline style cursor. To change style, the following steps must be performed:

STEP	ACTION
1	depress and hold left shift key
2	depress and hold left shift lock key
3	depress CURSR PA1 key

Repeated depression of the CURSR PA1 key will change cursor to the alternate style.

CLACKER CONTROL

The terminal is equipped with an audible clacker that provides audible verification of a keystroke. The operator can activate or deactivate the clacker by performing the following steps

STEP	ACTION
1	depress and hold left shift key
2	depress and hold left shift lock key
3	depress PF3 key

Repeated depressions of the PF3 key will alternately activate or deactivate the clacker.

VARIABLE FIELD UNDERLINE

The terminal operator can activate the variable field underline. Non-transmittable underscores are displayed to show lengths of unprotected fields. The operator can activate or deactivate this feature by performing the following steps

STEP	ACTION
1	depress and hold left shift key
2	depress and hold left shift lock key
3	depress PA 2 key

Reoeated depressions of the PA 2 key will alternately activate or deactivate the variable field underline. The PA 2 key may be designated U LINE / PA 2

FULL REVEAL

The terminal operator can activate the full reveal feature. Full reveal provides the means of displaying the hex code of any character (data or attribute) in the display memory with the exception of data characters in non-display fields. To activate or deactivate the full reveal mode, the operator must perform the following steps:

STEP	ACTION
1	depress and hold left shift key
2	depress and hold left shift lock key
3	depress RVL / PF5 key

Repeated depressions of the RVL / PF5 key will alternately activate or deactivate the REVEAL MODE. To identify the hex code of a character, place the cursor on the display location of the character to be identified. The hex character will be displayed on the status line at the bottom of the display. When in Reveal Mode, nulls (hex 00) will be displayed as dots and spaces (hex 20) will be displayed as delta's (A). Figure 94 is the ASCII interface code set.

LOWER CASE DISPLAY

The terminal operator can activate the lower case option by performing the following steps

STEP	ACTION
1	depress and hold left shift key
2	depress and hold left shift lock key
3	depress L.C. / PF1 key

The Lower Case LED indicator on the operator control panel will indicate if the terminal is in lower case mode. Repeated depression of the L.C. / PF1 key will alternately activate or deactivate the lower case mode.

PROC MODE

The terminal operator can activate the PROC Mode by performing the following steps:

STEP	ACTION
1	depress and hold left shift key
2	depress and hold left shift lock key
3	depress PROC / PF2 key

The PROC Mode LED indicator on the operator control panel will indicate if the terminal is in PROC Mode. Repeated depressions of the PROC / PF2 key will alternately activate or deactivate the PROC Mode.

FE MODE

The terminal operator can activate the FE Mode by performing the following steps:

STEP	ACTION
1	depress and hold left shift key
2	depress and hold left shift lock key
3	depress F.E. / PF4 key

The FE indicator and the status line will be displayed on the screen.

Repeated depressions of the F.E. / PF4 key will alternately activate or deactivate the FE Mode.

SCREEN FILL

The operator can fill the screen with a character or patterns of characters by performing the following steps:

STEP	ACTION
1	FE Mode enabled (follow steps above)
2	depress CLEAR key
3	enter the character or characters to be repeated starting at the home position
4	depress and hold left shift key
5	depress and hold left shift lock key
6	depress DUP key momentarily

The characters between the home position and the first null will be repeated to the end of the screen.

HELP PANEL

The operator can display the sixteen bytes of information pertaining to the option switch and strap settings, keyboard error counters and terminal's status one and status two bytes by performing the following steps

STEP	ACTION
1	FE Mode enabled (follow steps above)
2	depress and hold left shift key
3	depress and hold left shift lock key
4	depress HLP / PF6 key

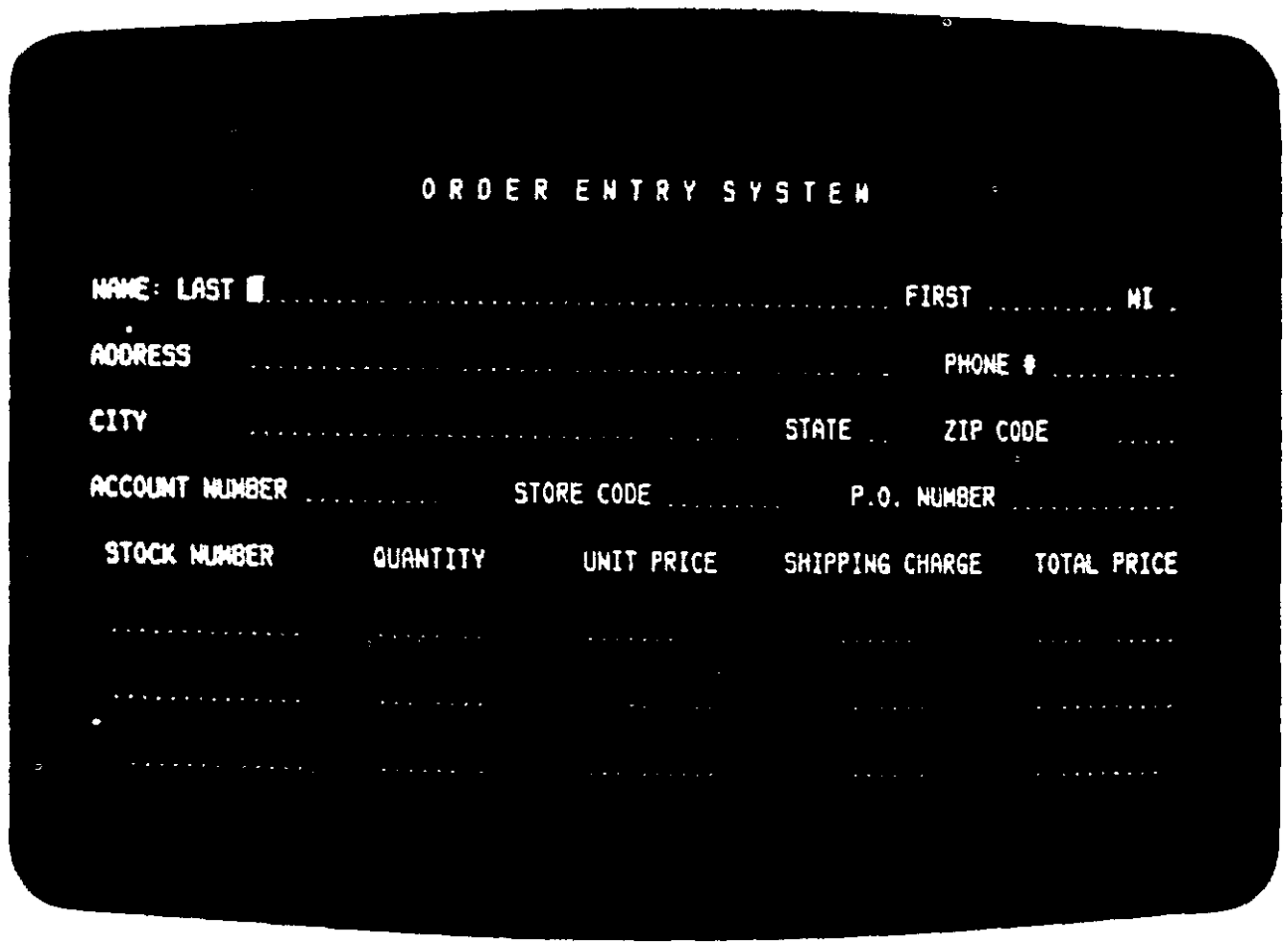
This display will normally be used by the Field Engineer in trouble resolution.

KEYBOARD CONTROL FUNCTION	FE ON?	ACTION		INDICATION
CURSOR STYLE CONTROL	NO	S/SL	CURSR PA1	Cursor will alternately change style between underline and blinking block.
CLACKER CONTROL	NO	S/SL	FF3	Clacker will alternately be enabled and disabled.
VARIABLE FIELD UNDERLINE	NO	S/SL	PA2	Variable Field Underline will alternately be enabled and disabled.
FULL REVEAL	NO	S/SL	RVL PF5	Full reveal will alternately be enabled and disabled.
LOWER CASE DISPLAY	NO	S/SL	LC. PF1	Lower case mode will alternately be enabled and disabled.
PROC MODE	NO	S/SL	PROC PF2	Proc Mode will alternately be enabled and disabled.
FE MODE		S/SL	F.E. FF4	FE Mode will alternately be enabled and disabled.
SCREEN FILL	YES	S/SL	DUP DUP	Screen will fill using characters between home position and first null.
HELP PANEL	YES	S/SL	HLP PF6	Help panel will appear.

OPERATION SUMMARY

Each of the keyboard control functions require depression of the left shift key and the left shift lock key, followed by the specified dual function key. The shift and shift lock key operation is depicted by S/SL in the following summary table.

FIGURE 4. FORMATTED DISPLAY EXAMPLE



FORMATTED AND UNFORMATTED DISPLAYS

It is important to understand that two types of displays - or modes of operation - are possible with the 270 Information Display System. These operational modes are called "formatted" and "unformatted" displays.

With a formatted display, the screen is formatted by the computer application software program.

The operator is restricted to specific fields or areas when entering data from the keyboard. An example of a formatted display is shown in Figure 4. Those areas where data already exists are called "protected" fields; the areas where it is possible to enter data are referred to as "unprotected" fields or input fields.

During operation, if the operator tries to enter data into a protected field, the keyboard becomes disabled to prevent such entry. With an unformatted display, the screen is free of prearranged data, and the operator may enter data in a completely free form manner using all character positions on the screen. However, each job may use a different format or none at all making it essential that each operator understand each type of display. In the following discussions, the operator should proceed with the operation pertaining to the requirements of the particular job assignment. The keyboard operating instructions are arranged so that the new operator can learn either formatted or unformatted display operation, but it is not necessary to learn both at the same time.

Typewriter Keyboard With Numeric Pad Operation

GENERAL OPERATION

The typewriter keyboard with numeric pad is similar to a standard typewriter keyboard in appearance and arrangement of keys. The majority of keys perform the same function as the keys of the same name on a typewriter keyboard. The layout of the typewriter keyboard with numeric pad is shown in Figure 62.

This keyboard can generate and display 26 upper-case alphabetic characters, 10 numeric characters, and 26 symbols and punctuation marks by operation of the key that designates the desired character. The character is displayed on the screen in the position marked by the cursor. The keyboard also includes the control keys which are used to edit data and generate input messages to signal the computer.

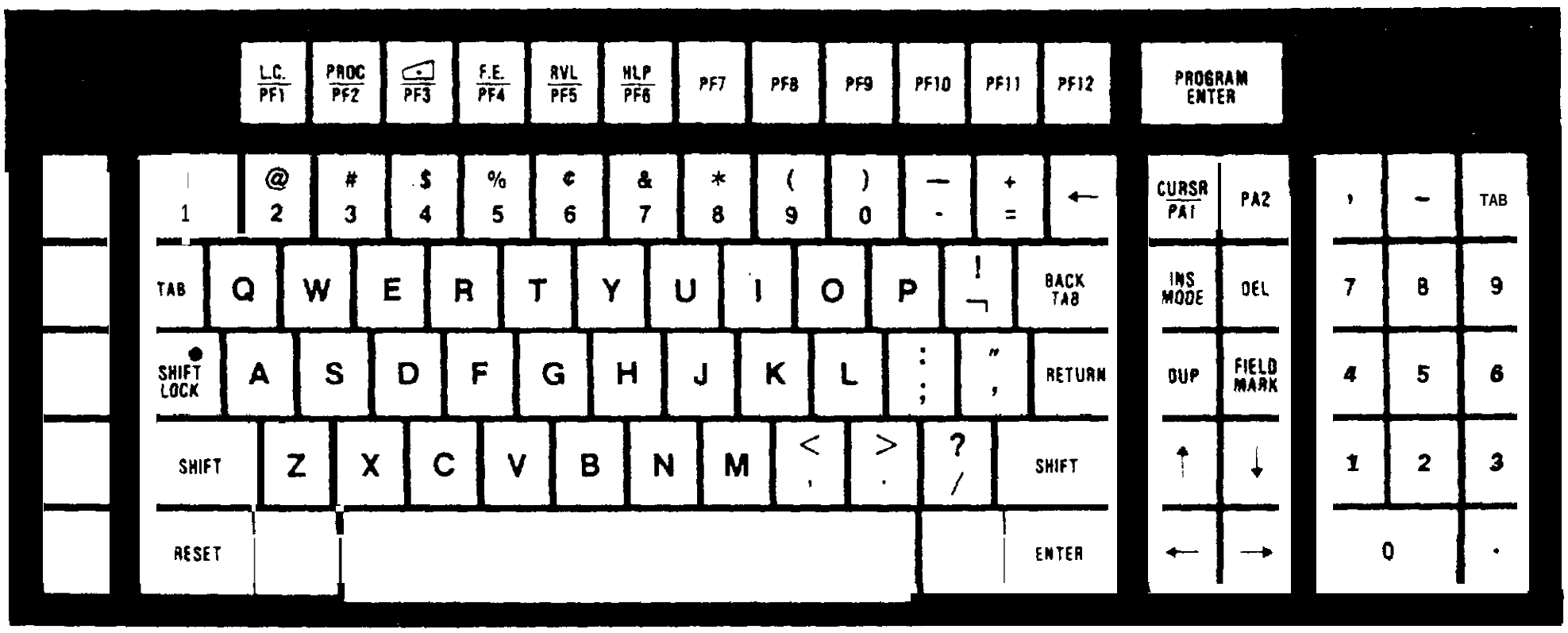
Keys that have two designations shown on their faces can generate either designation or character depending upon the position of the SHIFT key.

The lower character is generated when the selected key is pressed and the keyboard is in the unshifted mode. To generate the upper character, the SHIFT key must be held down while the selected key is pressed, The SHIFT keys and the SHIFT LOCK key function essentially the same as they do on any standard typewriter.

The 14-key numeric pad conveniently located on the right side of the keyboard is particularly useful in accounting operations where entry of quantities of numeric data is required. The operation of this numeric pad is similar to the operation of an adding machine or calculator. The additional numeric and punctuation keys provide a comfortable and expedient arrangement for the operator. The TAB key is included in the numeric pad to allow the operator to move from field to field without an inefficient movement to the TAB key provided on the opposite side of the keyboard.

NOTE: The PA 2 key may be designated U LINE.

FIGURE 62. TYPEWRITER KEYBOARD WITH NUMERIC PAD



OPERATION OF TYPEWRITER KEYBOARD WITH NUMERIC PAD

To operate the typewriter keyboard with numeric pad, proceed with the following steps:

NOTE: If your company has a sign-on procedure and your terminal la not signed-on, you can operate any key without affecting the program or the computer. A sign-on procedure allows the program to ignore any signals received from a terminal that is not signed on.

Press the POWER pushbutton to apply power to your terminal. When the power is on, the pushbutton lights. A delay of a few seconds is built in to allow the cathode ray tube (screen) to warm up. After this delay, a short horizontal bar or blinking square appears in the upper left portion of the screen (in the first character position on line 1). This symbol is the cursor.

Observe the control panel (Figure 63) to the right of the screen. The SYSTEM READY and the SYSTEM AVAIL lights should be on. If the INPUT LOCKED lights comes on, press the RESET key. If the INPUT LOCKED light remains on, check the position of the key in the SECURITY LOCK (if one is installed in your unit). The key should be turned to the left. Place the key in that position, and press the RESET key again. The INPUT LOCKED light should go out.

Now enter a line of characters (Figure 64) using any combination of letter and/or number and symbol keys. Note that the cursor travels along as you type this data. Also note that if a character key is held down, its operation is automatically repeated. Observe these characters on the screen.

FIGURE 63. POWER PUSHBUTTON

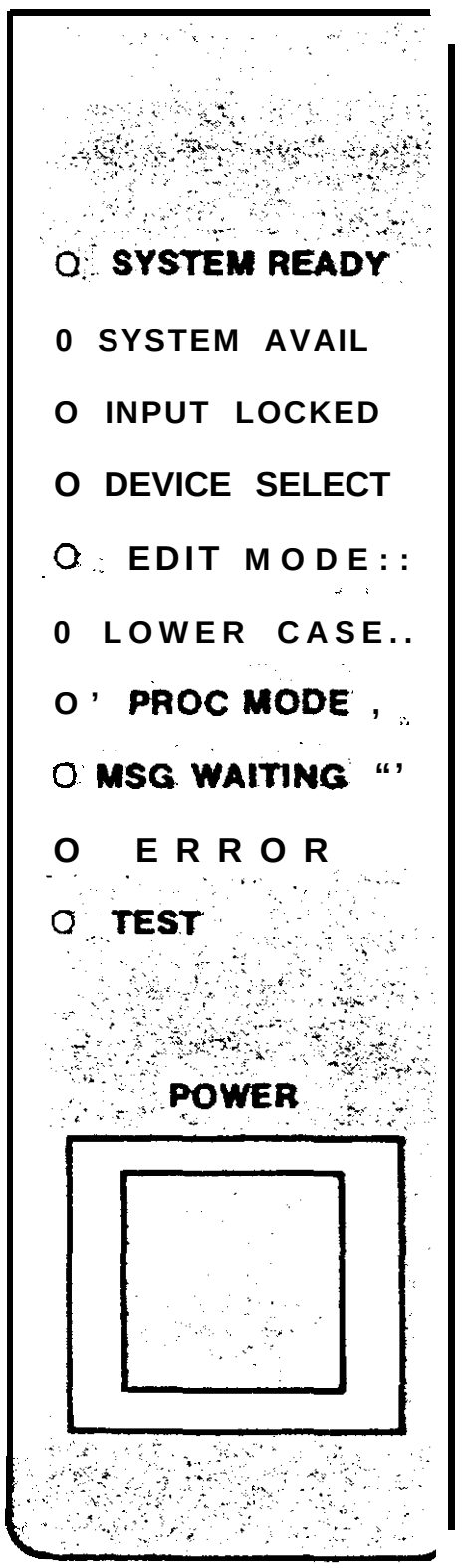


FIGURE 64. LINE OF CHARACTERS

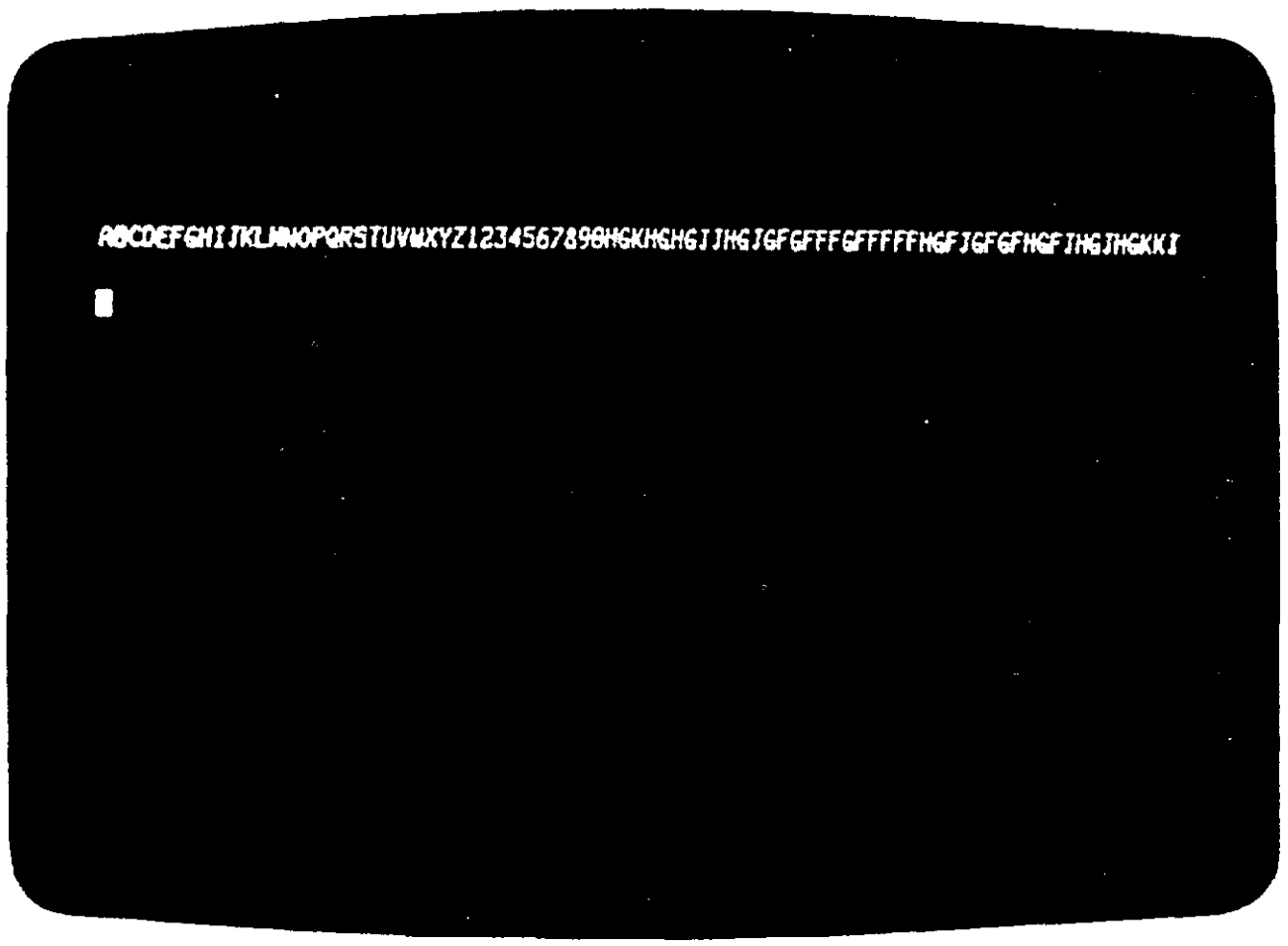
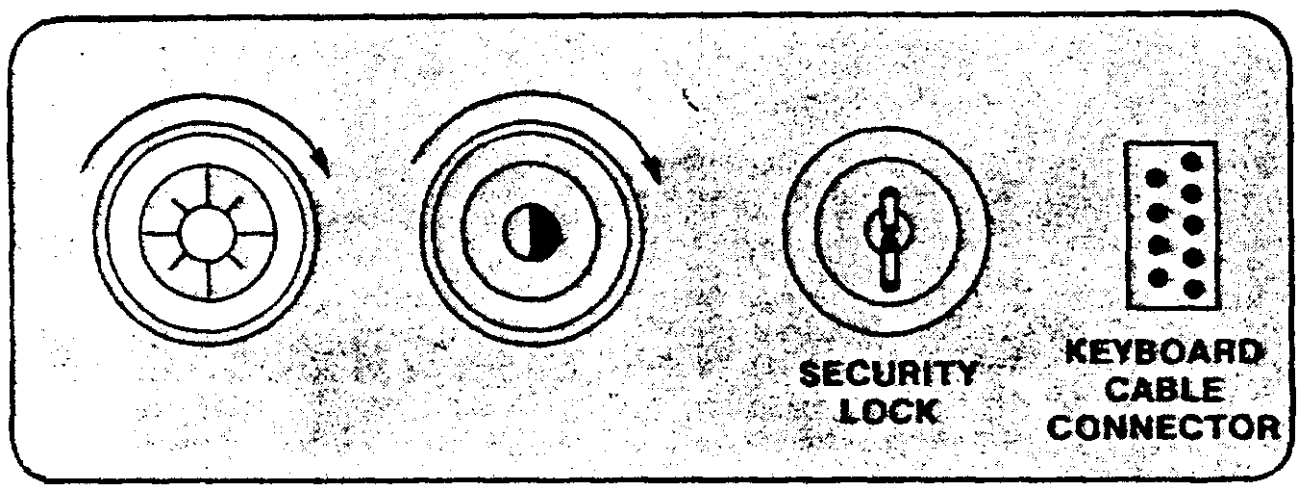
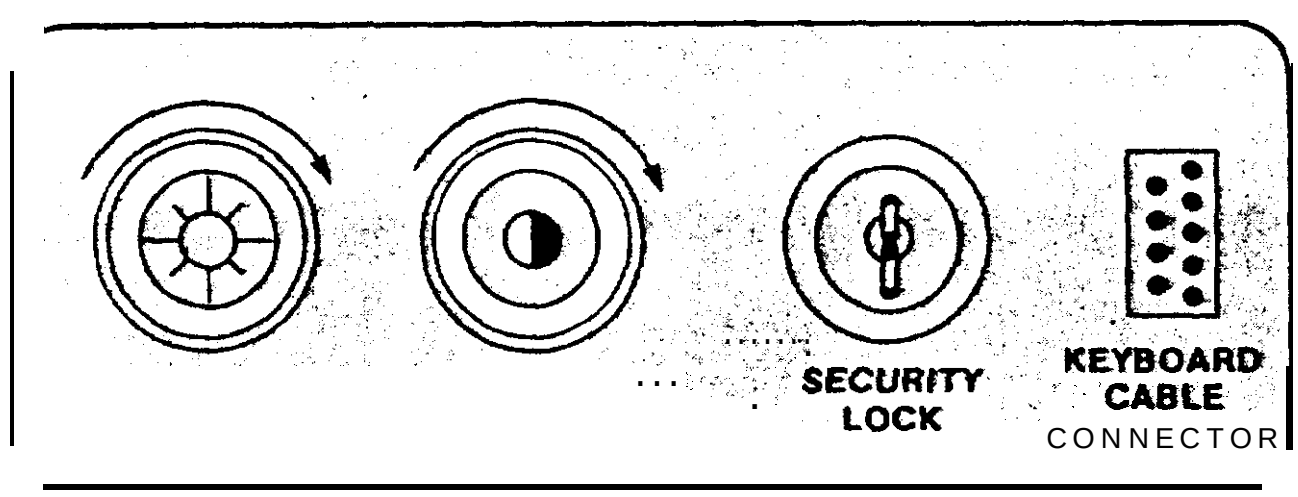


FIGURE 65. BRIGHT CONTROL



Adjust the brightness of the displayed characters using the BRIGHT CONTROL (Figure 65). Experiment with this control until a setting is found that is most convenient and comfortable for viewing. There is no correct setting for the brightness of the image.

FIGURE 66. FIELD CONTRAST

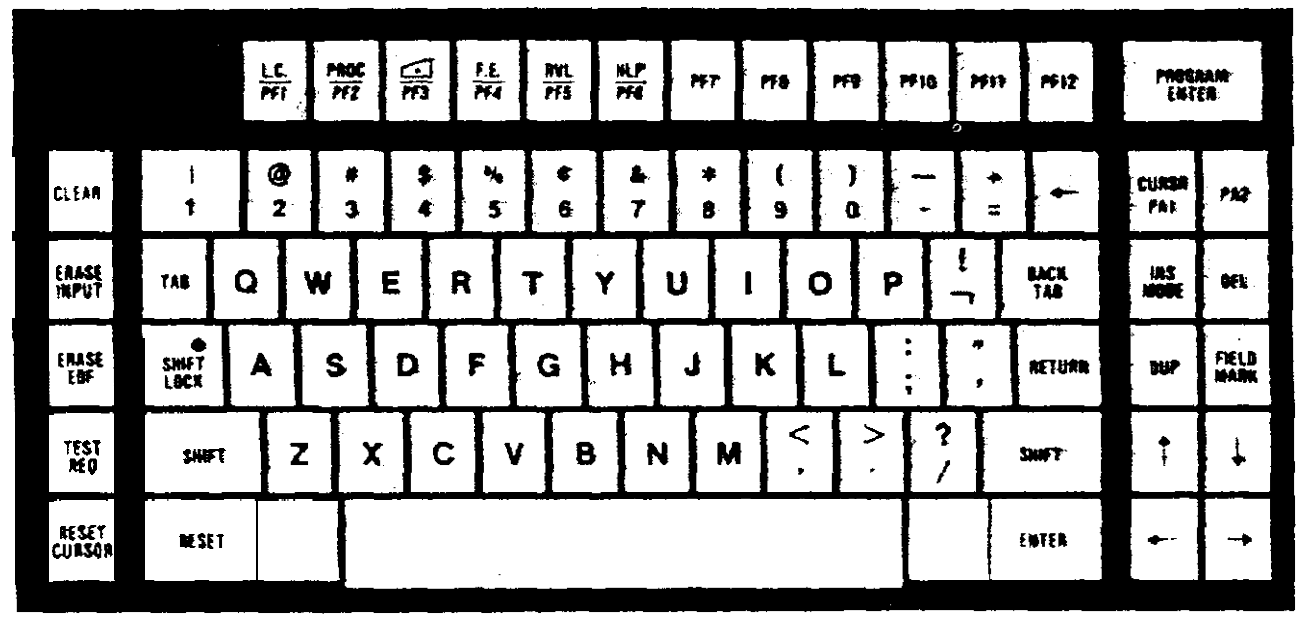


NOTE: Use of a formatted test display is essential to understanding and *accomplishing* the following instructions which pertain exclusively to formatted display operations and are clearly labeled as such. In this case, it is also necessary to understand the difference between a protected and an unprotected *field.*

UNFORMATTED DISPLAY: Use of the FIELD CONTRAST control for unformatted displays is not necessary

FORMATTED DISPLAY: Adjust the FIELD CONTRAST control (Figure 66). Note that the protected fields of the formatted display have a different intensity than the protected fields.

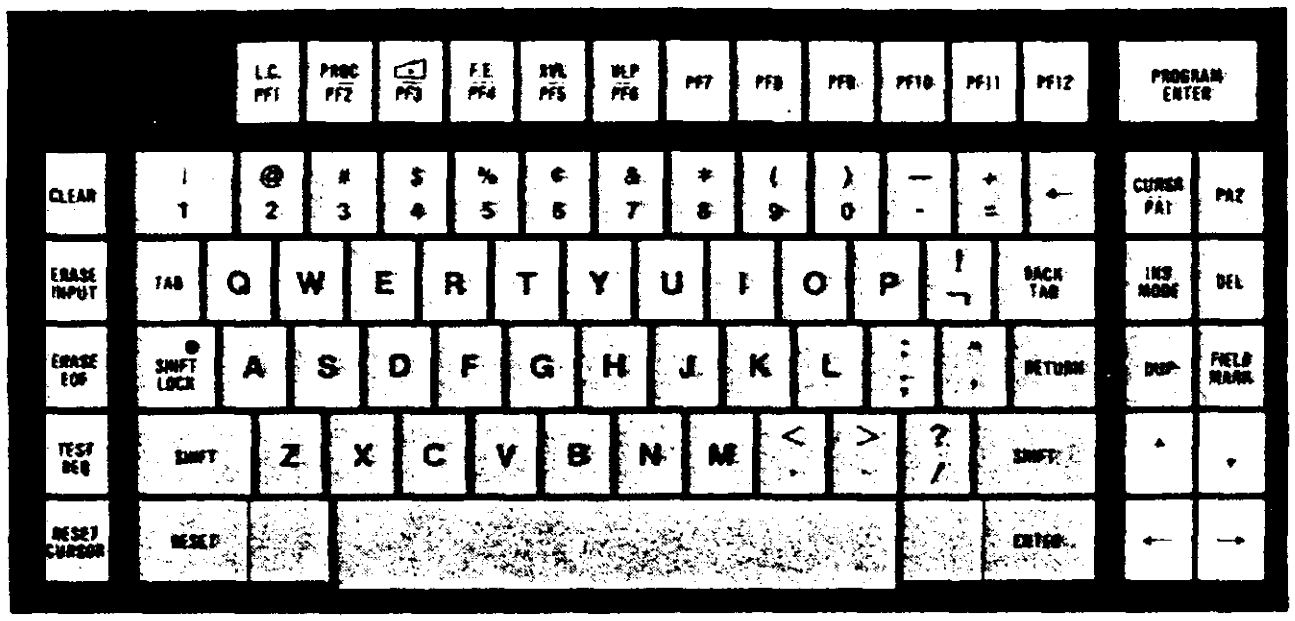
FIGURE 67. CLEAR KEY



UNFORMATTED DISPLAY: Press the CLEAR KEY. Note that pressing the CLEAR key blanks every character on the face of the screen and positions the cursor to the first character position on line 1. The SYSTEM AVAIL light (Figure 63) goes out momentarily, and the INPUT LOCKED light and DEVICE SELECT light come on momentarily. If the INPUT LOCKED light does not go out, press the RESET key to unlock the keyboard.

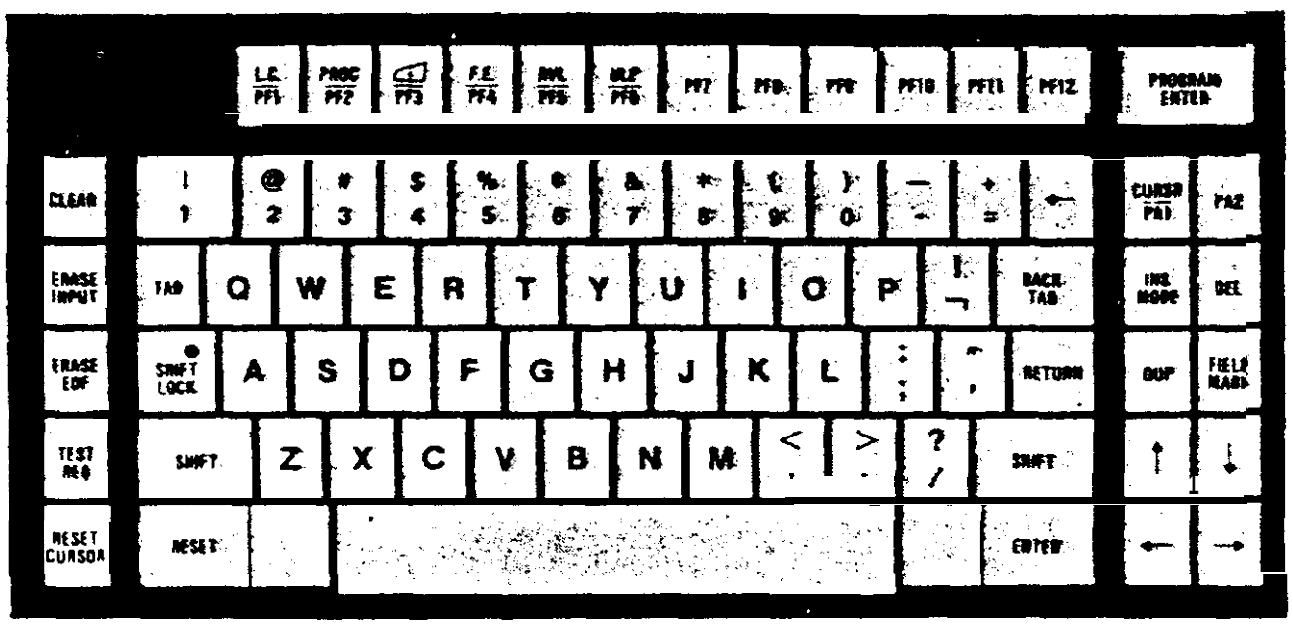
FORMATTED DfSPLAY: Do not press the CLEAR key when using a formatted display. Pressing this key blanks the screen and establishes an unformatted display.

FIGURE 68. CURSOR CONTROL KEYS



Move the cursor by pressing each of the cursor control keys in turn. Observe the operation of the cursor. Make the cursor wrap. Note that the cursor control keys move the cursor automatically if the keys are held down.

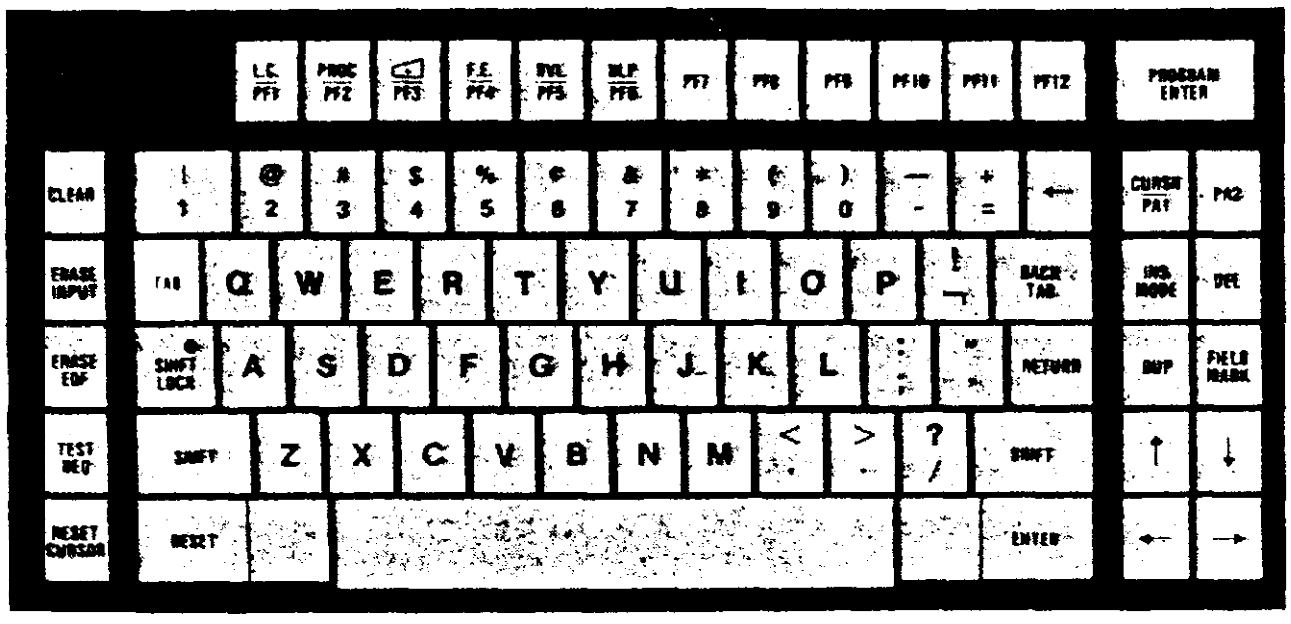
FIGURE 69. RESET CURSOR KEY



UNFORMATTED DISPLAY: Press the RESET CURSOR key. Note that the cursor is positioned to the upper left-hand corner of the screen.

FORMATTED DISPLAY: Press the RESET CURSOR key. Note that the cursor returns to the first character position of the first unprotected field.

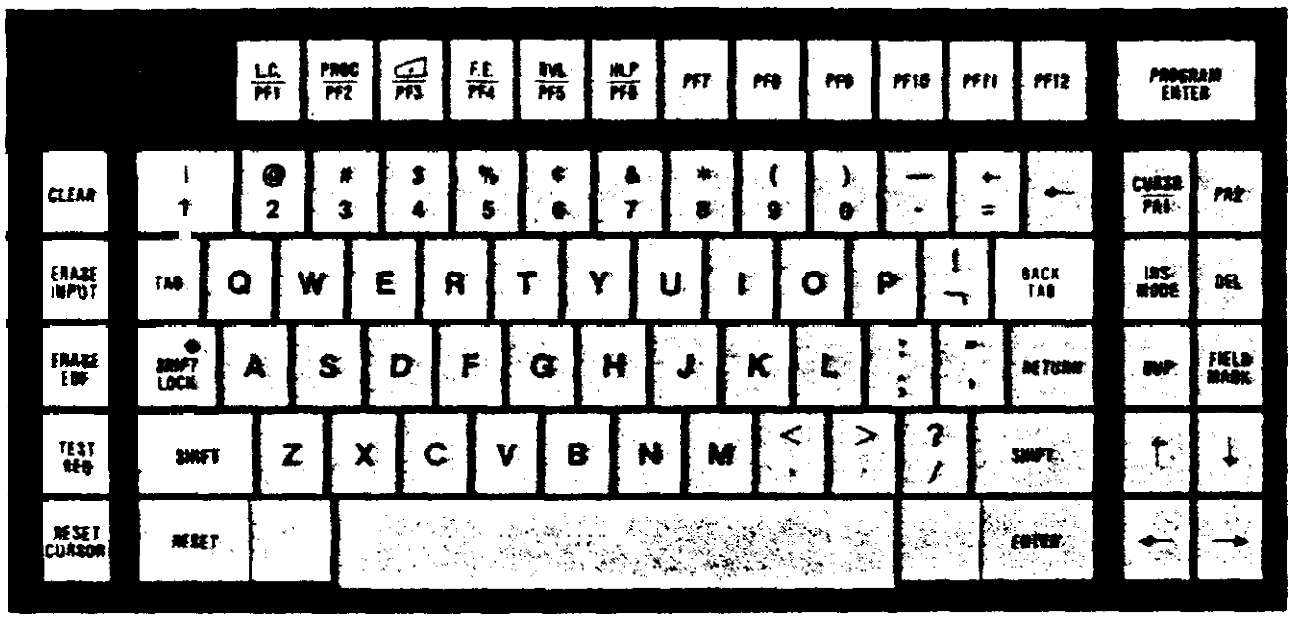
FIGURE 70. **TAB** KEY



UNFORMATTED DISPLAY: Press the TAB key. Note that the cursor does *not* move to a new position.

FORMATTED DISPLAY: Press the TAB key several times. Note that the cursor always moves to the right to the next position where it is possible for the operator to enter data. Using the TAB key, position the cursor to the farthest and lowest right-hand position possible.

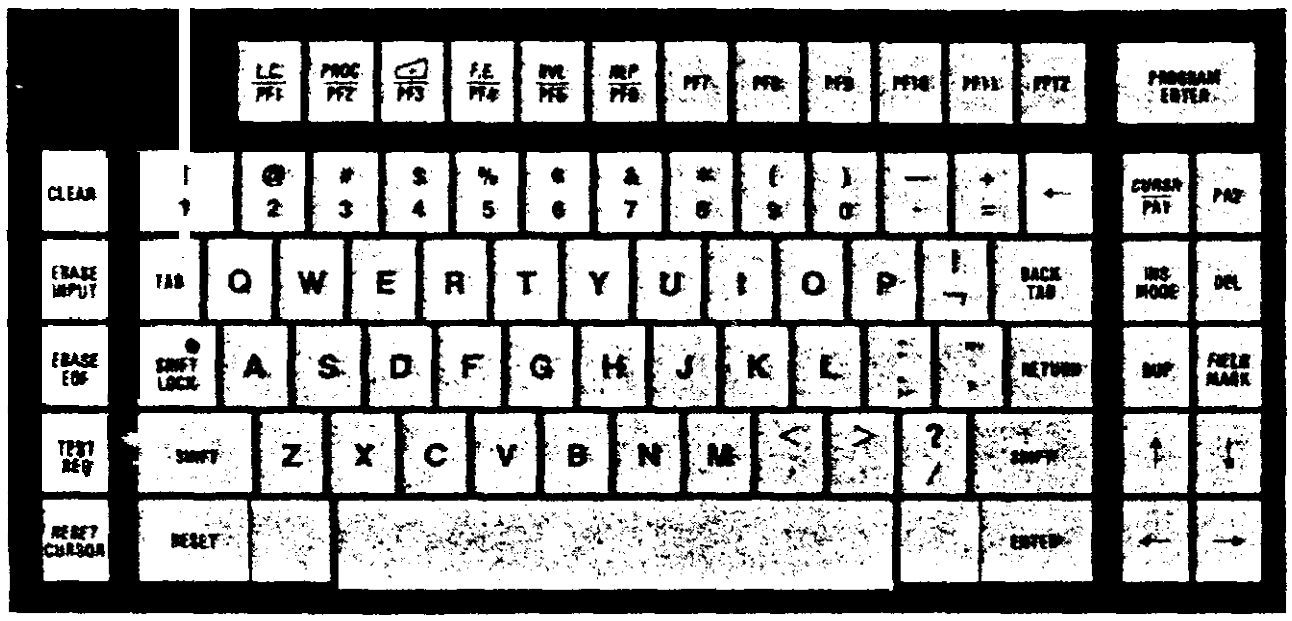
FIGURE 71. BACK TAB KEY



UNFORMATTED DISPLAY: Position the cursor near the center of the screen. Press the BACK TAB key. Note the cursor is repositioned to the first character position on line 1.

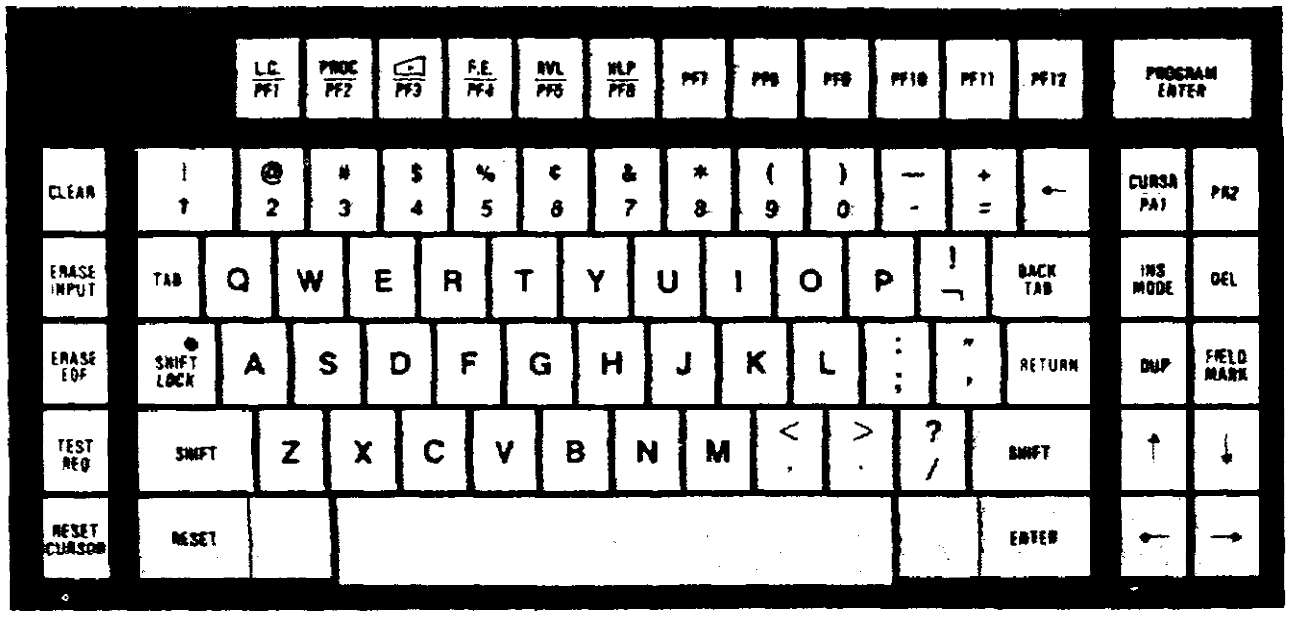
FORMATTED DISPLAY: Press the BACK TAB key, and note the operation of the cursor. Move the cursor at random with the cursor control keys or TAB key while alternately pressing the BACK TAB key. When the cursor is in an input field at a location other than the first character position, the BACK TAB key repositions the cursor to the first character position in that field. When the cursor is in the first character position of an input field, the BACK TAB key repositions the cursor to the first character position of the first preceding input field.

FIGURE 72. BACKSPACE KEY



Using the cursor control keys, position the cursor near the center of the screen. Now press the backspace key several times. Note that the cursor moves one character space to the left each time the key is pressed. (Operation of this key is identical to the operation of the move-cursor-left key.)

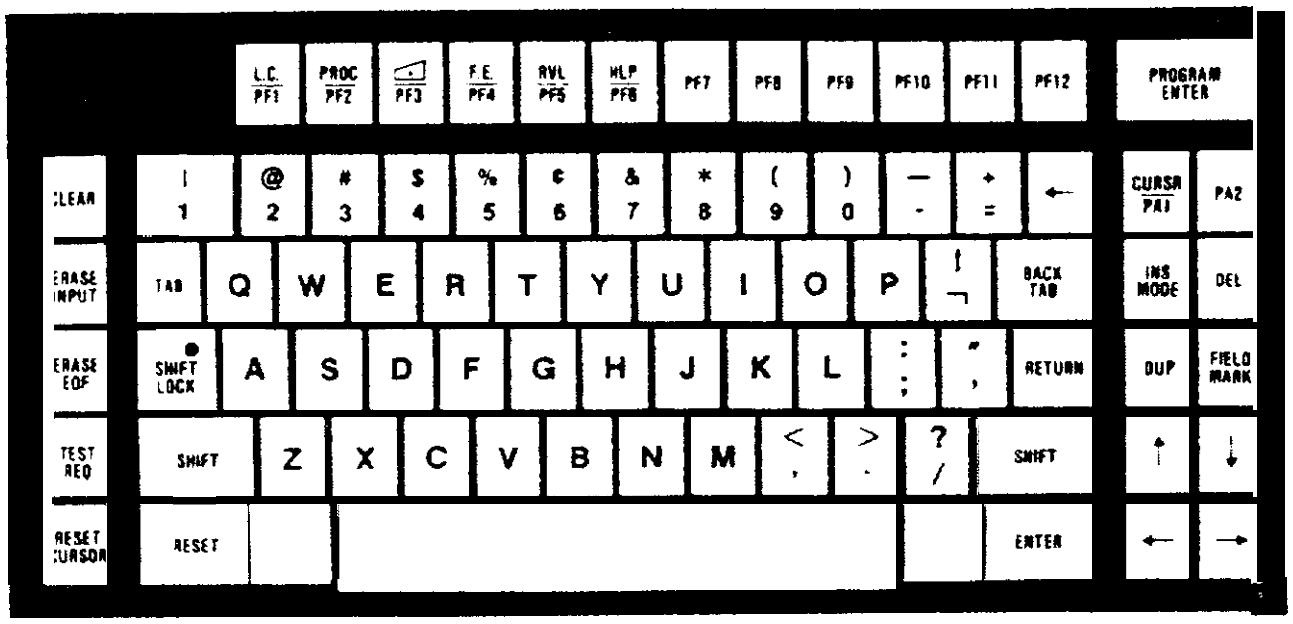
FIGURE 73. RETURN KEY



UNFORMATTED DISPLAY: Move the cursor, using the cursor control keys, to a position about halfway across the screen and several lines down. Press the RETURN key. The cursor is positioned to the first character location on the next line.

FORMATTED DISPLAY: Using the cursor control keys, position the cursor at or near the center of the screen. Press the RETURN key. Note that the cursor is positioned to the first character location of the first unprotected field on the next line.

FIGURE 74. SPACE BAR



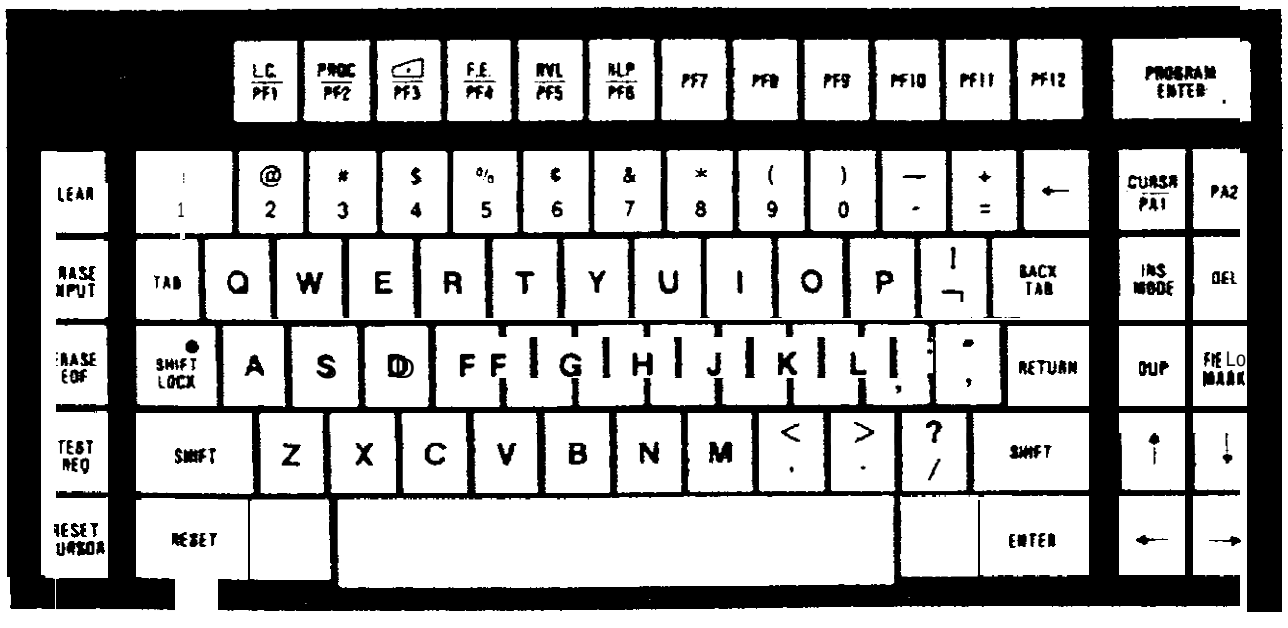
Reset the cursor, and enter random data on the screen. Reset the cursor, and press the space bar until the cursor travels over the characters previously entered. Note that the characters appear to be deleted; however, unlike a typewriter or a keypunch, a space is considered an actual character that occupies a position on the face of the screen. When the space bar is pressed, a space is entered on the screen; this space character replaces whatever character is presently in that position. Do not use the space bar to position the cursor for that reason.

FIGURE 75. SHIFT, SHIFT LOCK AND LETTER KEYS

The SHIFT keys, SHIFT LOCK key and letter keys (A through Z) operate the same as on a standard typewriter keyboard, assuming, of course, that the lower-case option is installed on the terminal. If the lower-case option is not installed, then the letters are always displayed as upper case.

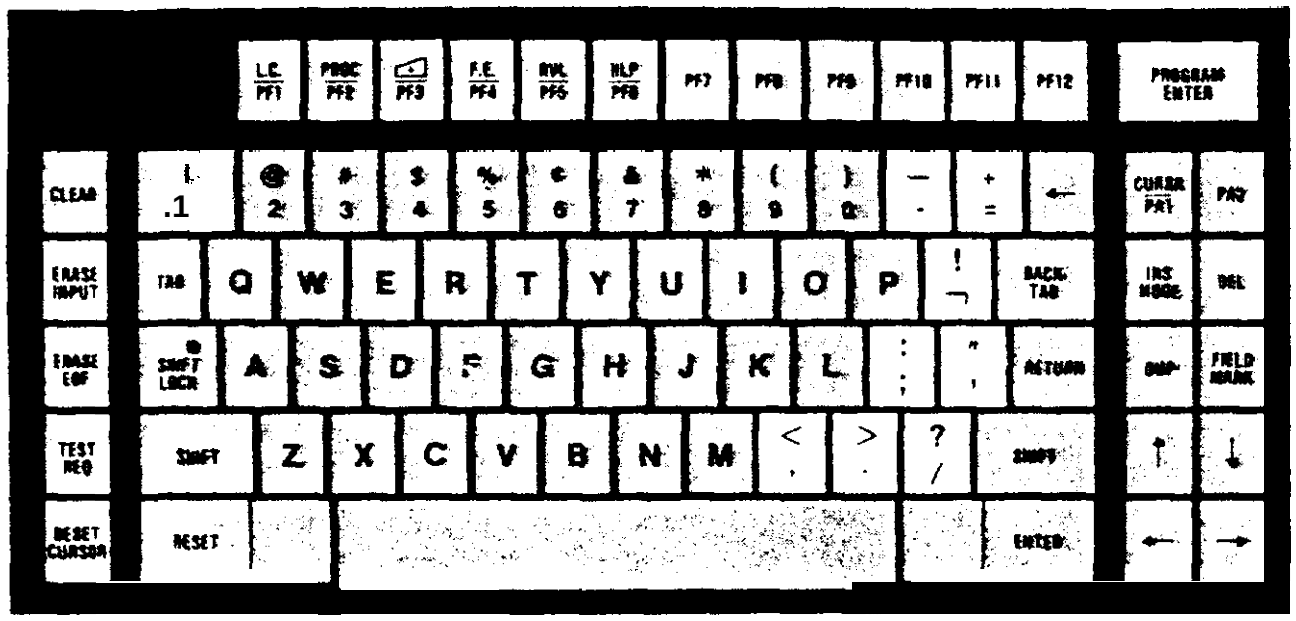
If the lower case option is installed, activate the lower case by depressing and holding left shift, left shift lock, and L. C./PF1 key. Note that the LOWER CASE light comes on. Press the SHIFT keys, alternately, and type data as appropriate using the other hand. Press the SHIFT LOCK key, and type data using both hands. Note the data appearing on the screen. Clear the display by pressing the ERASE INPUT key. To deactivate the lower case, repeat the sets used above to activate it. Note that the lower case light goes out.

FIGURE 76. NUMBER KEYS



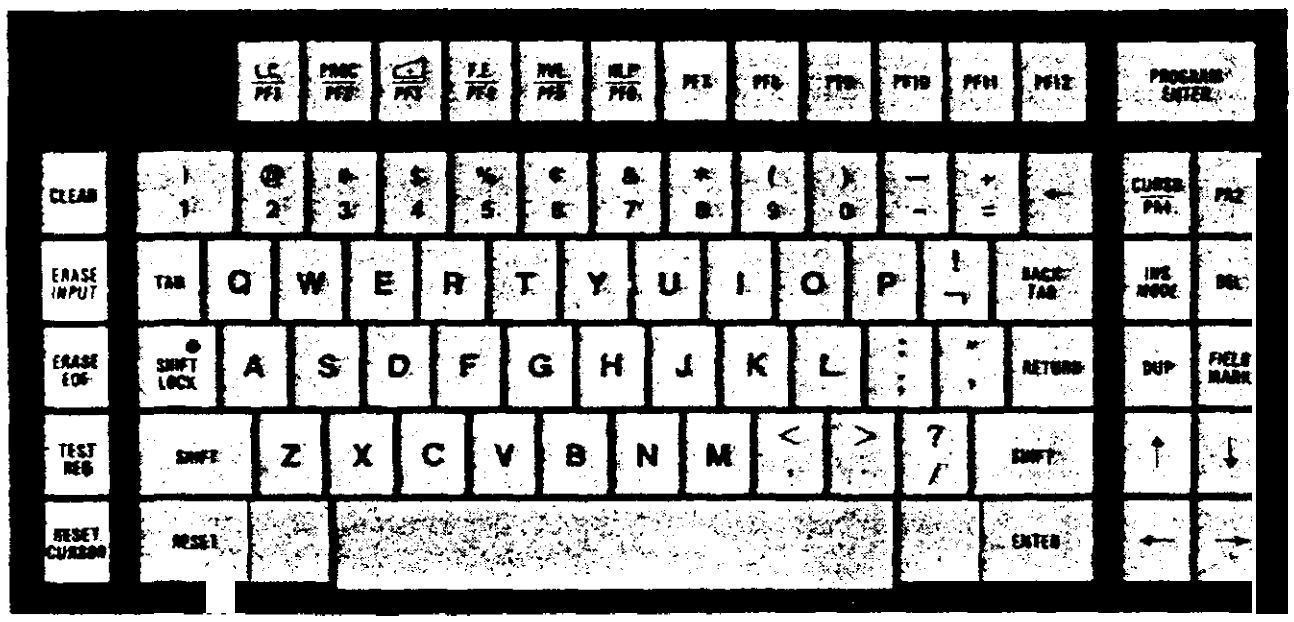
Operate the number keys (O through 9) with no shift. Observe that the digit shown on the lower half of the key is displayed. Press the SHIFT key, and operate the number keys. Note that the symbol shown on the upper half of the key is displayed.

FIGURE 77. SYMBOLS **AND PUNCTUATION MARK KEYS**



Operate the symbol and punctuation mark keys with no shift. Observe that the symbol shown on the *lower half* of the key is displayed. Press the SHIFT key. Note that the symbol shown on the upper half of the key is displayed. Clear the display by pressing the ERASE INPUT key.

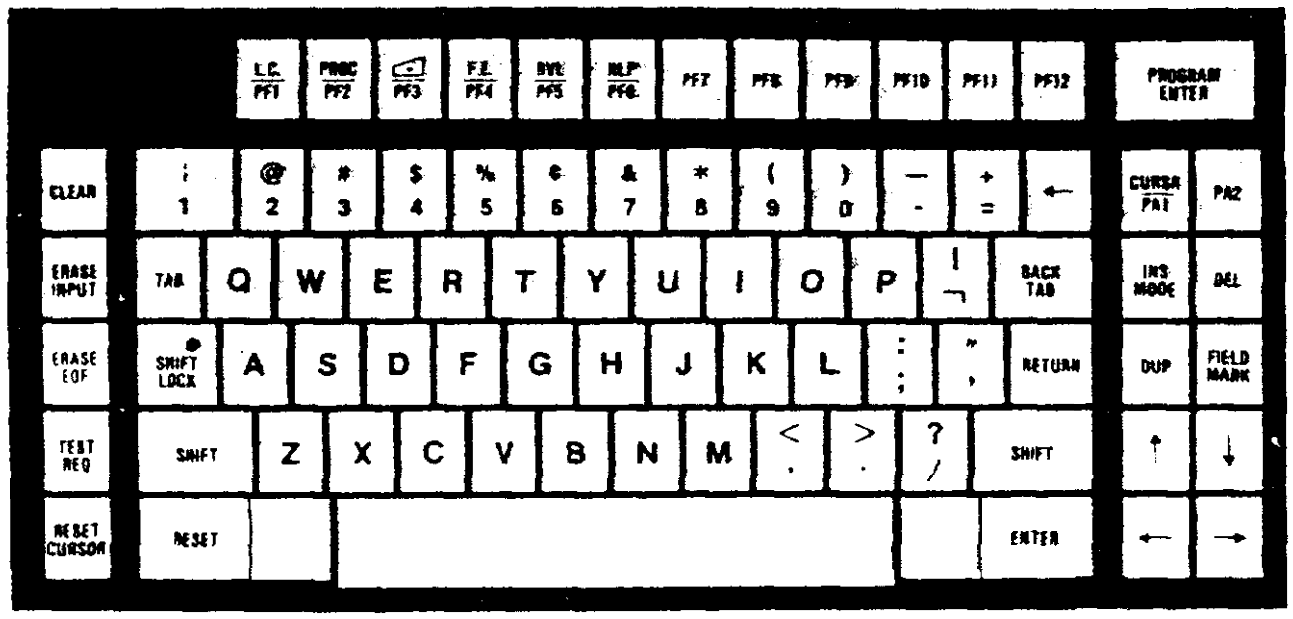
FIGURE 78. ERASE INPUT KEY



UNFORMATTED DISPLAY: Enter any amount of data on the screen. Press the ERASE INPUT key. Note that the inputted data is removed from the screen. Note that the cursor moves to the first character location on line 1.

FORMATTED DISPLAY: Enter data in the unprotected fields. Press the ERASE INPUT key. Note that all areas *where* data was entered are erased. Note also that the cursor moves to the first character location in the first field in which input data may be keyed.

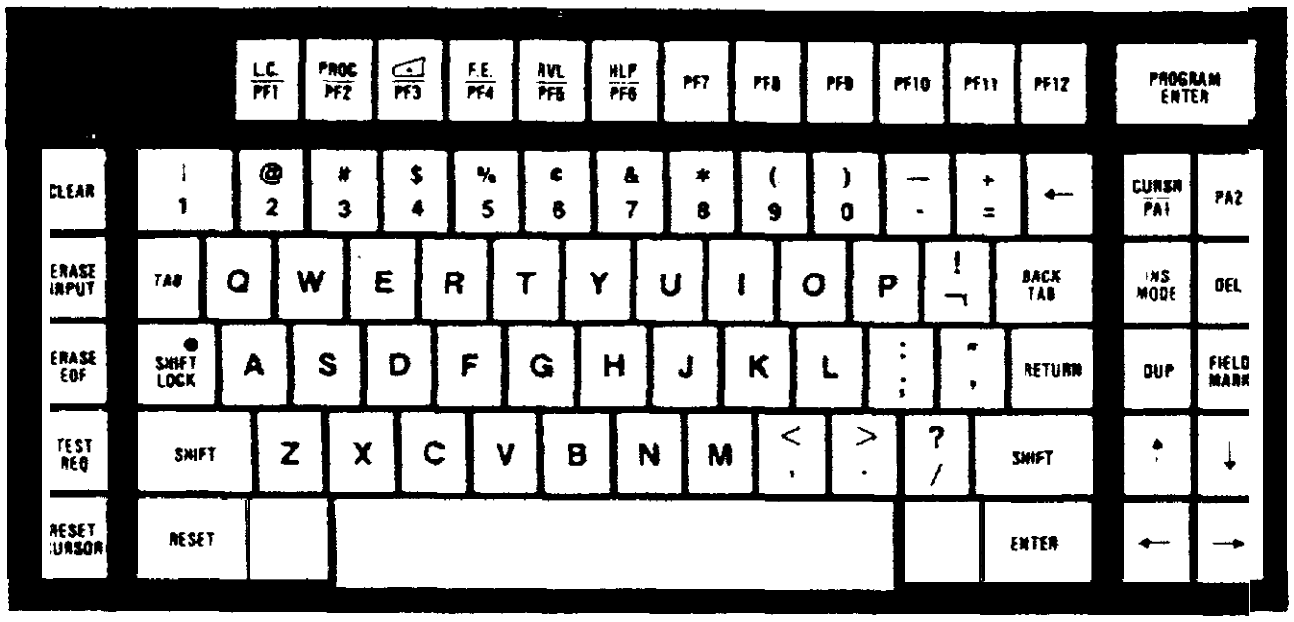
FIGURE 79. ERASE EOF (END OF FIELD) KEY



UNFORMATTED DISPLAY: Enter any amount of data on the screen. Press the backspace key several times to move the cursor back. Press the ERASE EOF key. Note that ail characters from the cursor location to the end of the screen are erased. The cursor, however, does not move.

FORMATTED DISPLAY: Enter any amount of data into the unprotected fields. Position the cursor in the middle of one of the completely filled unprotected fields. Press the ERASE EOF key. Note that all characters from the cursor location to the end of the field are erased. The cursor, however, does not move.

FIGURE 80. INS MODE KEY



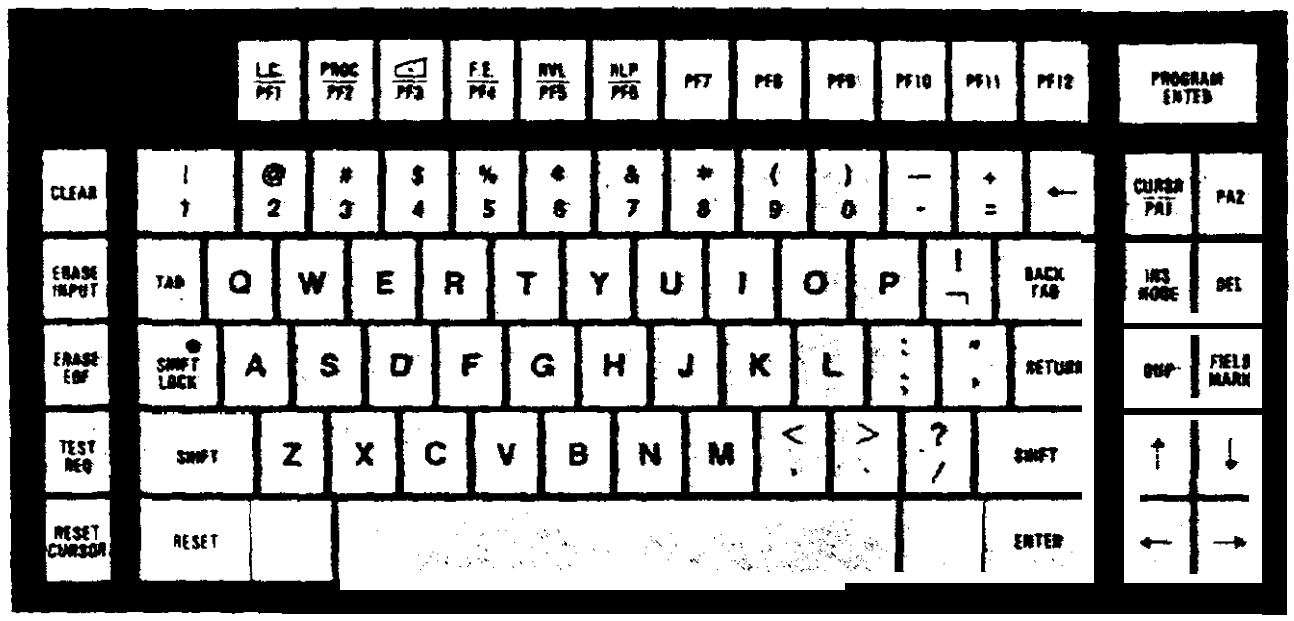
The purpose of the insert mode is to allow the operator to insert a character or characters into the middle of a field without disturbing the information that is already displayed there. Pressing the INS MODE key places the keyboard in the insert mode of operation,

UNFORMATTED DISPLAY: Enter data on the display screen. A social security number (168-22-5451) is a good example, leaving out the two digits in the middle of the number, i.e., enter 168-5451. Move the cursor to the first "5" in that number, and press the INS MODE key. Note that the EDIT MODE light (Figure 63) comes on. Now enter "22-", and observe that the numbers "5451" moves to the right to accommodate the insertion.

If an entry is a large one and covers more than one line during the insert operation, characters shift from the end of one line to the beginning of the next line.

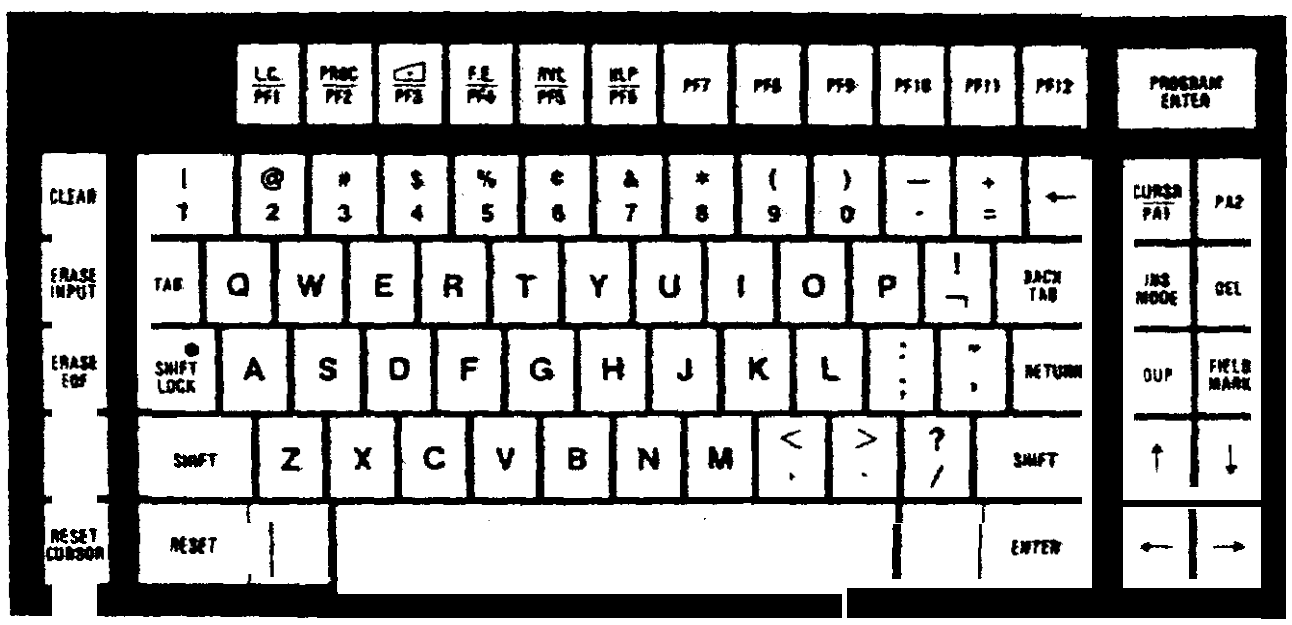
FORMATTED DISPLAY: Enter data into an unprotected field. A social security number is a good example (168 -'22-5451), leaving out the two digits in the middle of the number, i.e., enter 168-5451. Move the cursor to the first "5" in that number, and press the INS MODE key. The EDIT MODE light (Figure 63) comes on. Now enter "22-", and observe that the numbers "5451" *move to* the right to accommodate the insertion. If more characters are inserted than the field will hold, the keyboard *is disabled.* The number of characters that can be inserted into a field is limited to the number of blanks remaining in the field. If the field is a large one and covers more than one line, it is possible in some instances for an insert operation to shift characters from the end of one line to the beginning of the next line.

FIGURE 81. RESET KEY



Press the RESET key to reset the EDIT MODE (Figure 63). However, note that the RESET key does not change the status on the indicator panel during the short period of time when the display station is sending data to or receiving data from the computer. Thus, it may be possible to press the RESET key and not accomplish the desired reset. If this happens, press the RESET key again,

FIGURE 82. DUP KEY



UNFORMATTED DISPLAY: Operation of the DUP key is generally not applicable.

FORMATTED DISPLAY: The DUP key is used in some applications to duplicate information previously entered. Additional information must be supplied by your supervisor for its use; however, to observe the operation, press the DUP key. Note that a special character in the form of an asterisk is displayed in the position occupied by the cursor. Note that the cursor moves to the first character location of the next unprotected field.

FIGURE 83. DEL (DELETE) KEY

To simulate the use *of* the DEL key, enter incorrect data on the screen, for example: "Decemmber 22, 1974" Move the cursor to the position of the extra "m". Press the DEL key. Note that the character occupying the position underlined by the cursor is deleted, and that all characters to the right of that position are shifted left *one* position. Note that the cursor does not move. The correction made, move the cursor to the next character position where data will be entered.

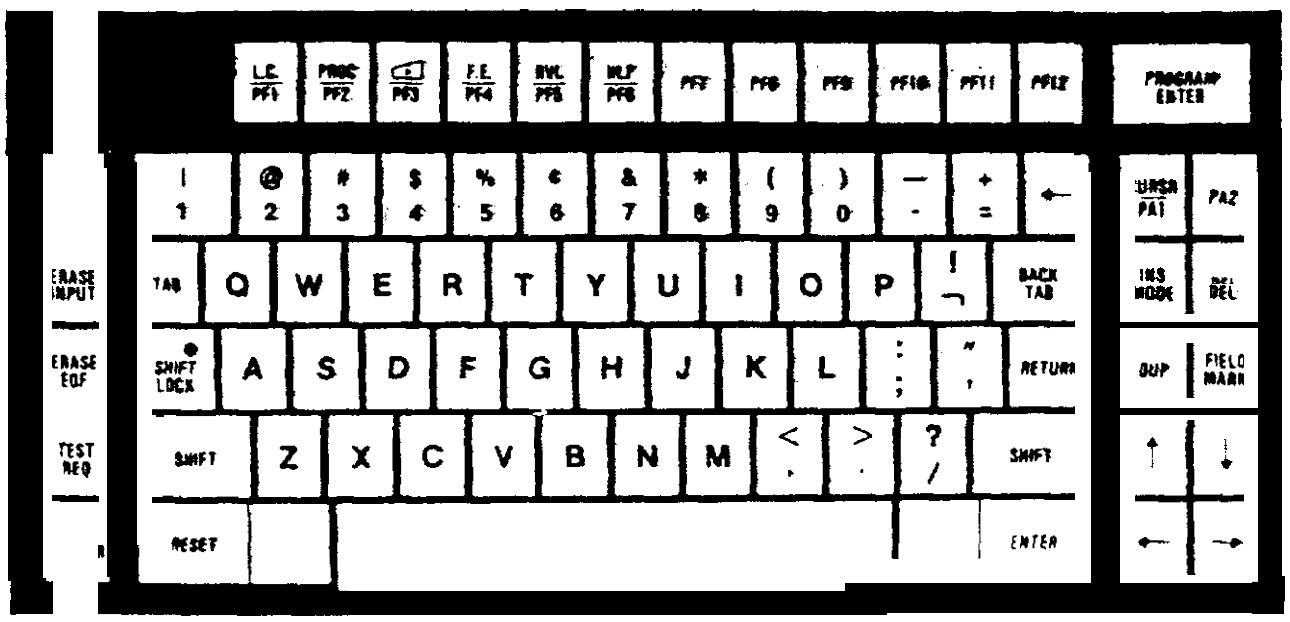
FIGURE 84. FIELD MARK KEY

The FIELD MARK key is used primarily when operating with an unformatted display. It indicates the end of a data field to the program. Press the FIELD MARK key and note that a special character in the form of a semi-colon is displayed. The cursor moves to the next character position.

FIGURE 85. PA1 AND PA2 KEYS

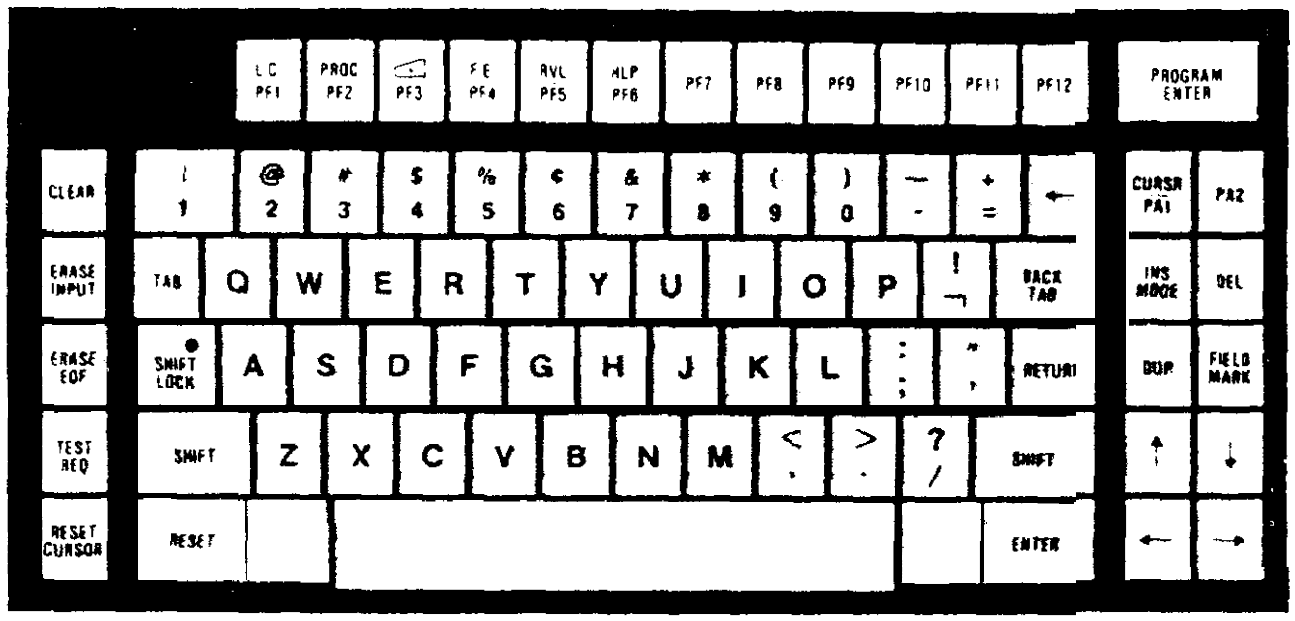
PA1 and PA2 are program access keys; they perform the function that their name implies. They provide a means of signaling the program or obtaining access to it. While the terminal is signaling the program, the INPUT LOCKED light comes on (Figure 63), making the keyboard inactive. Most programs, when replying to these keys, turn off this light; however, this decision is made by the program. The program that is operating in the computer at the time also determines now these keys are used. To determine their exact function, refer to the appropriate application procedure. If the INPUT LOCKED light remains on for an abnormally long period after one of the PA keys is pressed, press the RESET key to turn it off.

FIGURE 86. ENTER **KEY**



Pressing the ENTER key tells the program that the message has been completed, and it is time for the information on the screen to be entered into the computer. While the terminal is signaling the program, an INPUT LOCKED light comes on, making the keyboard inactive. Most programs, when acting on an ENTER key signal, turn off this light; however, this decision is made by the software program. If the INPUT LOCKED light remains on for an abnormally long period after use of the ENTER key, press the RESET key to turn it off.

FIGURE 87. PF1 THROUGH PF12 KEYS AND PROGRAM ENTRY KEY



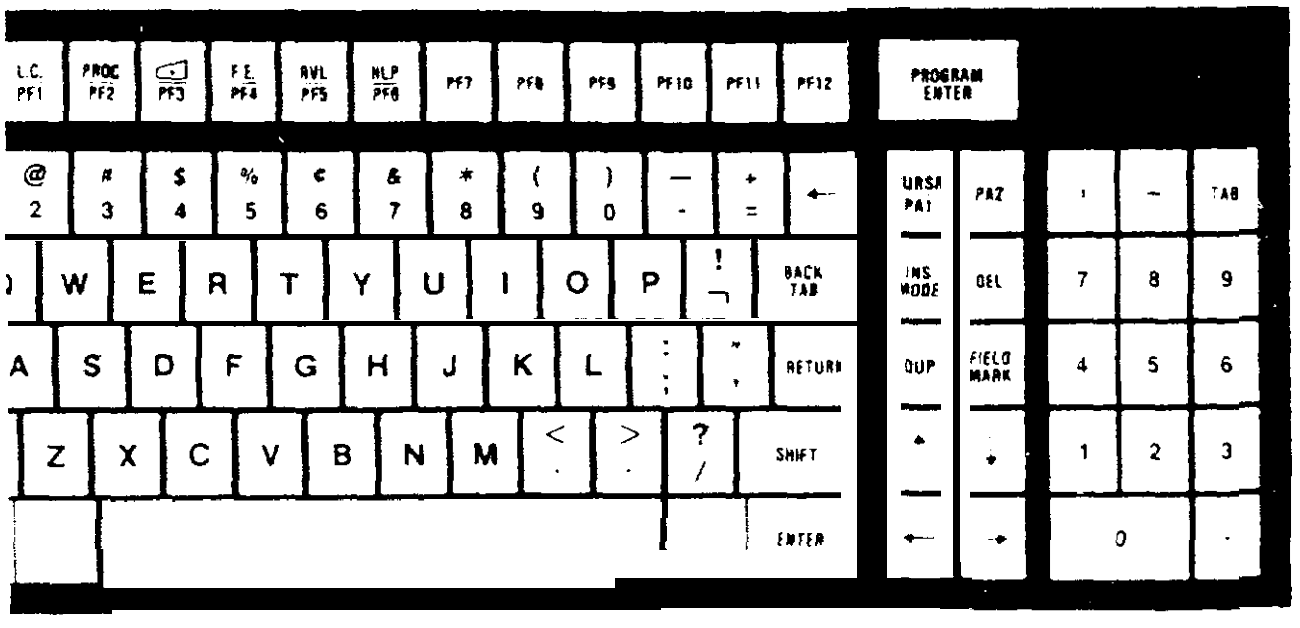
In addition to the functions permanently assigned to other keys (such as backspace, tab, back tab, etc.), application programs can assign other programmable functions to the Program Function (PF) keys. To determine the use of each key and the **corresponding action, refer to the appropriate application instruction.**

In some **applications, an optional use of the PROGRAM ENTER key is desired to prevent sending unsolicited** requests to the **computer,** For these applications, the PROGRAM ENTER key must be used in conjunction with the **PF** keys. The PROGRAM ENTER key must be pressed following the operation of any one of the 12 PF keys before a request is sent to the computer.

FIGURE 88. TEST **REO KEY**

The function of the TEST REQ key is determined by the computer. As such, this key may be ineffective. Pressing the TEST REQ key sends **a** unique signal to the computer telling the program that a test message is desired. While this signaling is taking place, the INPUT LOCKED light turns on (Figure 63) making the keyboard inactive. The program replying to the signal, normally turns off the light and displaysa message on the screen that advises what procedure should be followed. You should request specific instructions for use of this key.

FIGURE 89. NUMERIC PAD



The numeric pad is a convenience for those operations where personnel are familiar with operating calculators or adding machines. The numeric pad is laid out very much like such calculators and is normally used where quantities of numeric data must be entered. The TAB key functions identically to the TAB key on the main keyboard. Practice entering data using all of the keys on the numeric pad.

Operator Problem Determination

PROBLEM	REASON
A. Power Failure	**1. Unit not plugged into AC outlet.** **2. POWER pushbutton not pressed**
B. Display Failure	**1. Unit not plugged into AC outlet.** **2. POWER pushbutton not pressed.** **3. BRIGHTNESS control not properly adjusted.**
C. Keyboard Disabled	**1. Security key lock (optional) not turned on.** **2. INPUT LOCKED indicator illuminated.**
D. INPUT LOCKED Indiicator Lights	**1. RESET key not pressed.** **2. *Attempt to enter data in a protected field.*** ***3.* Attempt to erase in a protected field,** **4. Attempt to enter too many characters in a field.** **5. Attempt to enter alpha characters in a numeric field.**
E. No Response from Computer (SYSTEM AVAIL Indicator Not Illuminated)	**1. Computer system not operating.** **2. F. E. Mode activated.** **3. PROC indicator illuminated.**
F. Cursor Does Not Appear on Screen	**1. Unit not plugged into AC outlet.** **2. POWER pushbutton not pressed.** **3. BRIGHTNESS control not properly adjusted.**